

The Mining Journal RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 745.—VOL. XIX.]

London, Saturday, December 1, 1849.

[PRICE 6D.

TO ENGINEERS, MACHINE-MAKERS, FOUNDERS, BOILER-MAKERS,
STEAM-SHIP AND LOCOMOTIVE BUILDERS, AND OTHERS.
ENGINE WORKS, FOUNDRY, &c., FOR SALE, AT

ABERDEEN.—UPSET PRICE REDUCED TO £10,000.

There will be exposed to UNRESERVED SALE, with the Good-will of the Business, BY PUBLIC AUCTION, within the Lemon Tree Tavern, Aberdeen, on Wednesday, the 13th day of December next; at Two o'clock afternoon; at the reduced upset price above-mentioned, those extensive PREMISES at FOOTDEE, ABERDEEN, known as the YORK PLACE IRON-WORKS, belonging to Messrs. W. Simpson and Co., together with the whole MACHINERY, FIXED TOOLS, and PATTERNS, contained therein.

Those works contain large turning, fitting-up, and finishing shops, millwright and pattern shop, large iron foundry, boiler shop, brass foundry, forging and blacksmith's shop, iron store, warehouses, and counting-house. The whole of the buildings are of the most substantial, commodious, and suitable description for the various trades carried on within them, and are in excellent order, having been erected only 10 years ago, at a large expense.

The situation of the works is most advantageous, being within 100 yards of the dock, and the Fee-duty payable on the premises is but £20 per annum.

No expense has been spared in the procuring of the tools and machinery. They are of the fullest and most modern description, and in excellent working order (some of the locomotive tools are quite new), and are capable of turning out every kind of iron-work, including the largest size of marine and land engines, locomotive engines, railway fittings, and general machinery and blacksmith's work. There is a large and most valuable assortment of patterns, of all descriptions, which will be given over with the works as part of the plant.

There is a fixed condensing engine, of 25-horse power, with two boilers, and an ample supply of water within the premises, with all the requisite gearing and shafting for driving the machinery and tools.

There is also, in separate premises, a high-pressure engine, of 6-horse power, with all the tools, heating stoves, and utensils, suitable for the building of the largest class of iron vessels.

The upset price, of £10,000, being but a small part of the cost of these works, which are complete, and capable of carrying on a very large trade, a more favourable opportunity of entering into the business can scarcely occur.

In the meantime the works are continued in full operation, and the purchaser will have the advantage of a long established connection.

The demand for machinery and iron goods is very extensive in this city and neighbourhood, and the large and increasing number of steam-vessels now engaged in the trade of the port, together with the daily communications now about completed between the Azores, make it greatly necessary that demands, and consequently add to the value of these works. The cost of iron and other goods belonging to the works, with the loose tools, will, if desired, be given over to a purchaser at valuation.

Inventories of the tools, utensils, and patterns, with plans of the works, may be obtained, and all further particulars learned, on application to W. Simpson and Co., York Place Iron Works, Footdee, Aberdeen; or to Elie Marston, engineer, 12, Hungerford-street, Strand, London.—Aberdeen, October 9, 1849.

IMPORTANT TO CAPITALISTS.

VALUABLE SLATE VEIN IN THE MARKET.—The

Proprietor of a valuable SLATE VEIN, or BED, covering an area of 63 acres, one-fourth of a mile in width, and rising to an altitude of fully 900 feet (the property of which is freehold), is desirous of obtaining a PURCHASER for the same, who will be allowed advantageous terms, with an assured certainty of ample return for the capital expenditure required for carrying on extensive operations; and which, from the nature of the slate formation—stratum rising over stratum—ample space (with a deep fall) for rubbish deposit, free drainage, dispensing with the usual adjunct machinery, will not necessarily reach a tenth-part of the average working outlay of the generality of slate quarries. The Slate Vein, to which attention is drawn in this advertisement, will not be far from a navigable lake, in Carnarvonshire, North Wales, within six miles (four of which is the post-road) of an excellent shipping port.

Carnarvonshire is noted as the great emporium of the slate trade, which affords constant and lucrative employment to thousands, at the same time enriching the proprietors.

The surveys of three eminent engineers have been followed up by reports of a highly satisfactory character as to the quality and quantity of this eligible slate formation, and may be had, with a view of the plan and sections, on application to Griffith, Davies, Esq., Guardian Insurance Office, London; or Mr. W. Dow, surveyor, Llanrwst, Anglesey.

TRETHEVY COPPER MINE.—This MINE is situated in the parish of ST. CLEER, near LISKEARD, adjoining and parallel to the SOUTH CARADON MINES, whose riches are almost unequalled, and the vast profit realised by the fortunate adventurers are too well known to need comment: £5 per share was only expended, when they came to enormous riches. West Caradon, too, in the same neighbourhood, has turned out exceedingly rich. It is believed a similar fortune exists in TRETHEVY COPPER MINE; and when we view the trifling risk per share which is required to carry on the adventure, compared to the almost certain prospects of success, no one can object to the insignificance of the sum required. The mine is in a most beautiful valley at the foot of the Granite Hill of Caradon, a situation well known to miners to be productive. Cross-courses intersect the lodes at all points, being indicative of great mineral deposits. The east and west lodes are eight in number, large and well defined, with the two great South Caradon cross-courses running through the set, as well as the West Caradon, and other large cross-courses. The galena, lead, and black and yellow copper ore, is of a rich description.

A shaft has been sunk to the 35 fathoms level under the adit—the adit being 5 fathoms deep; but, owing to the scarcity of surface water in summer, the work could not be further prosecuted. Sufficient was seen of the lodes to evidence within 10 or 15 fathoms deeper the rich exist: carrying as it does, at that level, rich black and yellow copper ore, with all the characteristics of South Caradon. The work done will belong to the adventurers subject only to a small payment for the water-wheel and pump-work now on the set, which will hereafter be paid by the shareholders, when arranged, as also about £120 preliminary expenses.

It is now, therefore, only necessary to erect a 40-in. cylinder steam-engine, with pumps, &c., and sink the shaft 15 fathoms deeper, the estimated cost of which is £1,000; when this is accomplished, there can be very little doubt but that the shareholders will congratulate themselves on the stability and profitable nature of their adventure. The engine can be assisted by the water-wheel eight months in the year, so that the working expenses of the engine will be comparatively small, and every economy will be used in the works.

In order to carry out this undertaking in a *bold* and equitable manner, it is proposed, and agreed to by all parties concerned, that £1,000 shall be backed, being obvious that the importance and flattering prospects of the mining fully justifies such determination, so as legitimately to proceed with the works, for the purpose of developing the riches, which all competent judges, who have seen it, unanimously declare exist in the Trethevy Copper Mine. It will be here seen that the mine is not brought forward as a mine of a speculative character, but with the sole view of bringing a valuable property into commercial and profitable investment.—Sixty shares are reserved to the owners of the mine.

The dues to one-thirtieth.

Parties—Mr. Peter Morris, Liskeard; Mr. James Timewell (pro tem.), Exeter.

Binders—Devon and Cornwall Bank, Liskeard and Exeter; Messrs. Sanders, Exeter.

Solicitor—H. W. Hooper, Esq., Exeter.

The Mine is divided into five hundred and twelve shares: to be paid at various periods hereafter fixed, if required—First deposit, £1; second deposit, £1; third deposit, £2; and fourth deposit, £1 10s.

It is believed that very little more than £1,000 will be required before the mine is in profitable work. The greatest portion of the shares are already taken up by highly respectable shareholders.

Mr. Henry Vatcher, Exeter; Mr. Thos. Sanford, Exeter; Mr. Trickey, Plymouth; and James Lane, Esq., 30, Old Broad-street, London, will receive applications for the few remaining shares, of whom all further information can be obtained.

INDURATED AND IMPERVIOUS STONE, CHALK, &c.

—AGENTS, with capital, are WANTED in all TOWNS to SUPPLY (under British and Foreign Patents) the great demand for HUTCHISON'S MATERIALS—hard as granite, impervious to moisture, vermin, &c., the cheapest and most durable for all buildings, hydraulic, paving, monumental and decorative work.—The profits are large.

Apply to HUTCHISON & CO., 140, Strand, London; or Tanbridge Wells, Kent, and Caen, Normandy; stating name, address, and capital at command.

N.B.—Houses cased of chalk.—The produce of soft stone quarries, chalk, plaster of Paris, wood, pasteboard, and all absorbent materials indurated to resist frost, vermin, &c.

LICENCES GRANTED.

PATENT IMPROVEMENTS IN CHRONOMETERS, WATCHES AND CLOCKS.

E. J. DENT, #2, Strand; 33, Cockspur-street; 34, Royal Exchange (clock tower area); Watch and Clock Maker, BY APPOINTMENT, to the Queen and his Royal Highnesses Prince Albert, begs to acquaint the public, that the manufacture of his chronometers, watches, and clocks, is secured by three separate patents, respectively granted in 1840, 1842, Silver lever watches, jewelled in four holes, 6 gs. each; in gold cases, from £2 to £10 each. Gold horizontal watches, with gold dial, from 8 gs. to 12 gs. each.

DENT'S PATENT DIPLIODESCOPE.

A Marconi instrument, is now ready for delivery.—Pamphlets containing a description and directions for its use £1. each, but to customers gratis.

THE PATENT OFFICE AND DESIGNS REGISTRY,

No. 310, STRAND, LONDON.

INVENTORS will receive (gratis), on application, the OFFICIAL CIRCULAR OF INFORMATION, detailing the eligible course for PROTECTION OF INVENTIONS and DESIGNS, with Reduced Scale of Fees.

Messrs. F. W. CAMPIN and CO. offer their services, and the benefit of many years experience, in SECURING PATENTS and REGISTRATIONS OF DESIGNS, with due regard to validity, economy, and dispatch—assisted by scientific men of repute.

Also, in MECHANICAL and ENGINEERING DRAWINGS, whether connected with Patents, Railways, or otherwise, by a staff of first-rate draftsmen.

Application personally, or by letter, to F. W. Campin and Co., No. 310, Strand (corner of Newgate-street).

STEAM TO INDIA AND CHINA, VIA EGYPT.—Regular MONTHLY MAIL (steam conveyance) for PASSENGERS and LIGHT GOODS to CEYLON, MADRAS, CALCUTTA, PENANG, SINGAPORE, and HONG-KONG.

THE PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY

BOOK PASSENGERS and RECEIVE GOODS and PARCELS for the ABOVE PORTS by their steamers starting from Southampton on the 20th of every month; and from Suez on the 10th of the month.

BOMBAY.—Passengers for Bombay can proceed by this company's steamers of the 29th of the month, to Malta, thence to Alexandria by her Majesty's steamers, and from Suez to the Honourable East India Company's steamers.

MEDITERRANEAN.—MALTA.—On the 20th and 29th of every month. CONSTANTINOPLE.—On the 29th of the month. ALEXANDRIA.—On the 20th of the month.

SPAIN AND PORTUGAL.—Vigo, Oporto, Lisbon, Cadiz, and Gibraltar, on the 7th and 17th, and 27th of the month.

For plans of the vessels, rates of passage-money, and to secure passages and ship cargo, apply at the company's offices, No. 122, Leadenhall-street, London; and 47, High-street, Southampton.

JOSEPH DEELEY, of the LONDON and NEWPORT IRON-WORKS, NEWPORT, MONMOUTHSHIRE, respectfully recommends to the public his PATENT FOUNDRY FURNACE, which has been effectually tested, and is now in constant use at the above works, where it may be inspected by all persons interested.

This furnace operates without the aid of any motive-power to impel the air.

An immense saving is the consequence, both in erecting and working. One-third of the coke usually required is more than sufficient; a loss of only 22 lbs. to the ton being sustained in smelting.

The IRON MELTED in this furnace also undergoes an extraordinary improvement in quality.

SCOTCH PIG and SCRAP are returned equal to the best cold-blast in point of strength, and capable of being chlorified with the greatest facility.

FOUNDRIES USING the FURNACE may exist in the most densely populated cities, without causing the least nuisance—all smoke, dust, and noise being entirely avoided.

The FOREIGN PATENT RIGHTS of the above are FOR DISPOSAL, affording capitalists the most favourable opportunity for profitable investment.

APPLY TO THE PATENTEE AS ABOVE.

DUISBURG IRON-WORKS AND MINES, IN WESTPHALIA, CLOSE TO THE RHINE.

Managed in England according to the principles of the "Cost-book System," and in France as a Société en Commandite, under laws limiting the liability of the shareholders to their personal subscription.

Company's Offices, 29, Moorgate-street, City.

CWMBRAIN PATENT IRON REFINERY.—The PROPRIETORS of IRON FORGES and MILLS are respectfully INVITED to MAKE TRIAL of MR. BLEWITT'S REFINED IRON, or METAL, PREPARED by a NEW PATENT PROCESS.

whereby the IRON is completely FREED from the IMPURITIES CONTRACTED in the BLAST-FURNACE, and, by judicious mixtures, rendered applicable to every kind of manufacture. Heretofore, the metal usually sold in the market has been produced from the worst pigs, scraps, and refuse of some particular blast-furnace, or set of furnaces, without any mixture, or any regard to quality, or the purpose for which it might be required. The PATENT METAL is PREPARED ON SYSTEM, and TO ORDER, for any of the following purposes:

1. For BOILER and TANK-PLATES.

2. For TIN-PLATES, commonly called COKE-PLATES.

3. For STRONG CABLE, BOLTS, RIVET, and ANGLE IRON.

4. This COMPOUND PUDDLED, beat under the hammer into a bloom, reduced, and rolled into a 6 or 6½-inch bar, makes TOPS and BOTTOMS for FLANCH and OTHER RAILS, of very superior quality, and attended with less waste than any other kind of iron used for that purpose. It is also well adapted for nail-rods, horse-shoes, and for other ordinary uses of the blacksmith.

The PATENT METAL is marked with a squirrel, and the initials = R. J. B., and is to be had only at the "Cwmbrain Iron-Works," near Newport, Monmouthshire.

STRUVE'S PATENT MINE VENTILATOR.

Cost—£150.

TO COLLIERS and PROPRIETORS.

Quantity of air passed through a Mine almost unlimited, to the extent of 200,000 cubic feet per minute, if necessary—depending on size of apparatus.

COST of an APPARATUS to produce a ventilation of 20,000 cubic feet per minute, ONE HUNDRED and FIFTY POUNDS, exclusive of patent right. This amount of ventilation would be sufficient for a mine working 150 tons per day, provided it was not very faulty; in which case it would be desirable to provide for 30,000 cubic feet of air per minute. The capabilities of the Ventilator may be doubled at any future time, at a comparatively small cost.

The Ventilator has been at work for upwards of six months at the Eaglesbush Colliery, near Neath, working under a rarefaction of 2½ to 3 inches of water, which demonstrates the impracticality of furnace ventilation, when the shafts are shallow and the airways small.—It is practical to rarify a mine by this ventilator to the extent of 2 feet of water, or 2 inches of mercury.

LICENSES will be GRANTED on application to

MR. WILLIAM PRICE STRUVE, SWANSEA, CIVIL ENGINEER and MINERAL SURVEYOR.

ASSAYING AND ANALYSIS.—Mr. MITCHELL begs to inform the MANAGERS, &c., of MINES, SMELTING-WORKS, and MANUFACTORIES, that he still continues to CONDUCT ASSAYS and ANALYSES of all PRODUCTS, METALLURGICAL and manufacturing, at his LABORATORY,

23, HAWLEY-ROAD, KENTISH TOWN, LONDON.

to which address communications are to be forwarded.—Instruction in all branches of assaying and analysis as usual.

ILLS.—BROTHERTON & CO. beg to call the attention of all parties EMPLOYING STEAM POWER to their PATENT PURIFIED OILS, for the economical working of STEAM-ENGINES and MACHINERY and BURNING IN LAMPS. The adoption of its use effects a saving of 25 per cent. over any other oil, and its properties are such as to greatly preserve machine-cry. bearings.

BROTHERTON & CO., HUNGERFORD WHARF, CHARING-CROSS, LONDON.

ROYAL CORNWALL POLYTECHNIC SOCIETY.—The "ARTIZAN," for December, price 1s., contains ENGRAVINGS of the MECHANICAL INVENTIONS exhibited at the last Meeting. Also, a large PLATE of the NEW PRINTING MACHINE, which prints 10,000 of the Times per hour. Details of Steam Dredging—Dimensions of New Iron Steamers, and a mass of practical engineering matter. Sent free for 15 stamps.—Address to the publishers, 69, Cornhill; or may be ordered of Heard and Sons, Truro, and all booksellers in the kingdom.

Just published, royal 12mo., cloth, price 4s. 6d.

A TREATISE ON THE COAL-FIELD OF SOUTH WALES; Explanatory of a New Theory on the Position of the Measures therein, with a Demonstration of the Subsidence intervening between Lynyi and Penllegaer, &c. &c.

By FREDERICK MOSES, Mining Engineer, &c.

Second Edition, with considerable additions.

"The entire work will be found highly interesting as a geological description of the phenomena of stratification, and as a review of the several opinions on the formation of Coal, and the effects of electricity in some of the most important of Nature's operations. It is written in an easy and instructive style. Technical language is, as far as possible, avoided, and the book published in a neat and finished style."—Mining Journal.

"This is a work on a local and theoretical point in geology of considerable importance, in which the author lays down a New Theory on the position of the Coal Measures in the South Wales Coal-field, and demonstrates the subsidence lying between Lynyi and Penllegaer. He likewise enters on the subject of Cosmogony generally, as will be read with interest by those engineers connected with coal mining."—Civil Engineers' and Architects' Journal.

London: Simpkin, Marshall, & Co.—Swansea: Ivey & Pearce; and all booksellers.

THE MINING ALMANACK for 1850: compiled and arranged

by HENRY ENGLISH, Mining Engineer, &c. Under the especial sanction and patronage of H.R.H. PRINCE ALBERT, Lord Warden of the Stannaries, Chief Steward of the Duchy of Cornwall, Devon, &c.—THE SECOND VOLUME will appear early in JANUARY next, with ADDITIONAL TABLES and STATISTICS, connected with the Mining Interests.—Names of subscribers are requested to be addressed to Mr. H. English, 25, Fleet-street.

NOTICE TO RAILWAY AND STEAM-BOAT TRAVELLERS.—ANDERTON'S HOTEL, 162, 164, and 166, FLEET-STREET, LONDON, (Established upwards of 200 years). F. CLEMOW begs to acquaint Gentlemen, Families, and the Public in general, visiting London, that the above Hotel is situated in the centre of London, with communication every five minutes to and from all the Railways and Steam-boats, near the Theatre, Law Courts, Bank, Docks, &c.—The larder and wine arrangements are equal to the best clubs in London. The daily bill of fare contains every delicacy. Dinner from Twelve to Eight o'clock. From the joint, with vegetables, &c., 1s. 6d.; ditto, with soup or fish, 2s.; game, poultry, &c., Breakfast, with joint, 1s. 6d. Beds, 1s. 6d. per week. Servants charged in the bill. Tartle soup, 1s. 6d.; mock ditto, 1s. per quart; sent to all parts of England. Rooms for large or small dinner parties, private meetings, societies, &c. Dinners and suppers sent out to order. Contracts for board and lodgings. F. CLEMOW, 162, 164, 166, FLEET-STREET. A night Porter always in attendance.—N.B. Table-d-Hôte daily, at two, five, and half-past five o'clock, at 2s. each.—Soupe, fish, joints,

Transactions of Scientific Bodies.

MEETINGS DURING THE ENCLING WEEK.

THIS DAY.....	Asiatic—5, New Burlington-street.....	2 P.M.
	Westminster Medical—17, Saville-row.....	8 P.M.
MONDAY	Entomological—17, Old Broad-street.....	8 P.M.
	British Architects—16, Grosvenor-street.....	8 P.M.
	Chemical—149, Strand.....	8 P.M.
	Medical—3, East court, Fleet-street.....	8 P.M.
TUESDAY	Pathological—21, Regent-street, Wigmore-place.....	8 P.M.
	Linen-Silk-square.....	8 P.M.
	Northumbrian—21, Queen-street.....	3 P.M.
	Civil Engineers—35, Great George-street.....	8 P.M.
WEDNESDAY	Society of Arts—Adelphi.....	8 P.M.
	Geological—Somerset House.....	8 P.M.
THURSDAY	Antiquaries—Somerset-house.....	8 P.M.
	Royal Society—Somerset-house.....	8 P.M.
	Zoological—11, Hanover-square.....	8 P.M.
SATURDAY	Royal Botanic—Innes Circle, Regent's Park.....	8 P.M.

INSTITUTION OF CIVIL ENGINEERS.

NOVEMBER 27.—JOSHUA FIELD, Esq., (President) in the Chair.

The paper read was a "Description of the Old Southend Pier-head, and the extension of the pier; with an inquiry into the nature and ravages of the 'Teredo Navalis,' and the means hitherto adopted for preventing its attacks," by Mr. John Paton. After describing the form of construction of the old pier-head, and showing the adoption of copper sheathing for protecting it from decay, and the important considerations involved in the attempt to preserve marine structures, the paper explained the ravages committed by marine worms ("Teredo Navalis," "Lymnoria Terebrans," and others) on the piles, both above and below the copper sheathing. The sheathing extended from the top of the mud to 3 feet above low-water mark; the worm destroyed the timber from 2 feet below the surface of the mud, to 8 feet above low-water spring tides; and, in fact, out of 38 fir timber piles, and various oak piles, not one remained perfect, after being up only three years; indeed, some were entirely eaten through. A general outline of the extension of the pier, and a minute description of the pier-head, were then given, showing the means adopted by the use of iron piles, and by scupper-nailing the inner piles, to preserve the structure from decay. The greater portion of the extension of the pier, the length of which was one mile, as well as the whole of the pier-head, were constructed of square hollow iron piles, and scupper-nailed fender piles; the iron piles being forced to a depth of from 8 feet to 16 feet, by pulling them backwards and forwards with ropes attached to them, and not by driving in the usual manner; they were then filled with gravel and concrete to within five feet of the top, and the fir piles to sustain the superstructure were fitted into them. The pier head was constructed with 40 cast-iron piles, and 20 fender piles, nailed from 5 feet below the bed of the sea, to 8 feet above low-water; its greatest height was 25 feet above low water spring tides.

The paper then entered into an investigation of the nature and operations of the "Teredo Navalis," and showed, as a remarkable peculiarity, that no chemical means had hitherto prevented wood from being destroyed by those animals and the "Lymnoria Terebrans," whose destructive powers were likewise noticed, and as having penetrated between the copper sheathing and the wood at Southend. The operations of the "Teredo," although most destructive in warm climates, extended themselves to all places, having been found almost in the Polar seas. The chief peculiarities which distinguished the "Teredo" were stated to have been ascertained by minute microscopic investigation, and that woody fibres of an extremely minute nature had been discovered in the body, thus settling at rest the question as to whether the "Teredo" did actually feed upon the wood. It was stated, that the failure of chemical means to preserve timber from destruction by the marine worm was believed to proceed from two causes—namely, of poisonous compounds having no seriously injurious effect upon them, and the sea-water, and other things, decomposing the poisonous ingredients contained in the wood. In corroboration of the first of these views, accounts of experiments made by Mr. Paton were adduced; and physiological facts, quoted from the *British and Foreign Medical Review*, were brought forward to show that cold-blooded animals were much more tenacious of life than those of a higher temperament; and hence, it was argued, that as it required a very large quantity of poison of the most virulent nature to destroy animals of a much higher order than the "Teredo Navalis," it would take a still greater quantity to affect those animals as they existed in their own element; and it was questioned, under the circumstances, whether wood could ever be so completely and thoroughly saturated, as in any degree to affect them. The corrosive action of the sea-water, its extended influence and constant variability in different parts of the globe, were then commented on, and some of the various salts held in solution mentioned. It was believed to be impossible to form any general notion of the precise action of sea-water on timber, whether chemically saturated or not, without a series of most minute experiments, and a large body of facts, carefully collected in different parts of the globe—as that which might be advantageously used in the Thames, might not be of the slightest avail in the Tropics, and vice versa; it was thus questioned, whether any generally applicable principle could be found for the countering of that universal solvent of soluble matter. The conclusions arrived at were, that the ravages of the marine worm were not prevented by any chemical application, and that nothing but mechanical means could ever prove completely successful. Studding with broad-headed nails was considered to be the most effectual remedy, and various authorities were quoted, proving its success. The paper concluded with a list of places where wood, prepared with various chemical ingredients, had been destroyed from various causes.

The discussion was commenced by the Dean of Westminster, who descended very lengthily on the analogous action of the Pholas on stone, and on other topics, until, as the evening was so far advanced, it was announced that the discussion on the paper would be continued at the next meeting, on Tuesday, December 4th, when the first monthly ballot would take place.

FRANKLIN COXWORTHY'S DISCOVERIES IN NATURAL PHILOSOPHY.—No. XI.

As far as the nature of these papers will admit of the inquiry, we have explained in our preceding articles the grounds upon which Franklin Coxwothy based his conclusions that electricity is identified with cold, and not with heat—that in this particular his predecessors, in the vast study of natural phenomena, had mistaken the positive for the negative, and vice versa—and electricity is the bond or adhesive influence of matter. And we demonstrate these facts by the most appreciable, because the simplest, evidence.

Our next object is to present to our readers the inductive reason through which our authority has arrived at the conclusion that "attraction of gravitation" as it is termed, and which would be just as definite if it were termed the gravitation of attraction, is nothing more than a certain electrical condition. At the same time we shall endeavour to show wherein the Newtonian principles fail to explain in all that appertains to this important branch of the subject; and the unfortunate necessity to which the scientific world has been reduced, to invent new terms with which to explain what is deficient in the primary exposition of those principles.

"Gravitation" we understand to imply a certain attractive force, by which a smaller body is drawn towards a larger one; and, although in this action there is wanting a definitive connection with some ascertained principle—with the nature of the residing power that should exercise its influence by imparting to the larger body this attractive force—still there was nothing known when Newton lived that could attach an ambiguous meaning to his reasoning, so far as that reasoning went. But we now know that there are circumstances under which repulsion takes place instead of attraction. And in this the Newtonian system utterly fails of explanation.

If a silken bag, of any form, such, for instance, as a balloon, be filled with carbonic acid, and lifted from the ground, it will descend; and it will be said that it was drawn towards the earth by "attraction of gravitation." If, on the contrary, the balloon be filled with hydrogen, instead of descending it will ascend. Now, it would appear that, if the principle were universal in its application, it should always exercise the same power over matter. But in this latter illustration we are obliged, according to the received doctrines, to abandon gravitation, and say that the balloon ascends by displacement—by virtue of the difference of space occupied by the same weight of the more buoyant gas, and of the air. With the respective facts we have become familiar, although unable to offer any satisfactory explanation of the opposite results.

Having, however, identified electricity with cold, and satisfied himself that electricity is the bond of matter, Franklin Coxworthy, on the well-established fact that bodies dissimilarly electrified attract each other, thus assigned electricity, the cause of gravitation. The centre of the earth is the extreme of negative electrical condition. Its temperature is estimated at 450,000° Fahrenheit. We have, next, the general fact, that matter, of its kind, is light in proportion to its combustibility. The different sorts of wood, and the varieties of coal, are known to be inflammable commensurately with their lightness. And hence, proof abundant, that the heaviest bodies, those of the most compact nature, possessed of the highest electrical condition—are, therefore, drawn towards the centre of the earth; whilst those which approach in their character more to the electrical condition of the earth's centre, such as hydrogen, are repelled from it.

Did the evidence of the correctness of his conclusions rest, however, upon these facts, we should have hesitated in submitting them to our readers. But they were merely progressive points in his elucidations. Reasoning upon them, he arrived at the conclusion, that weight could be nothing more than the indication of the force by which a positively electrical body is attracted towards the centre of the earth; and that, as the electrical condition of a body must increase in proportion to its density—to the contiguity of its particles—matter, by compression, or contraction, must *actually increase in weight*, with increase of specific gravity. And this fact, curious and startling as it is, our authority has proved; although the relative increase of weight, to the increase of specific gravity, has yet to be determined. We reserve for our next number the sus-

taining, yet simple experiments, with which the new doctrine is demonstrated. They are capable of being made as familiar to our readers, as any, the most common operation connected with every-day experiments.—S: Chel. Jour.

THE MINES AND MINERS OF CORNWALL.

Long before Roman, Dane, Saxon, or Norman, put his foot as a conqueror on British ground, Cornwall was both known and frequented for its mineral wealth. The earliest celebrity which the country seems to have attained in this respect was for its tin, but subsequent mining operations have proved it to be also rich in copper and lead. It likewise possesses iron, but not in very great quantity; whilst silver is found to a small extent in the lead mines. For many centuries the tin produced in Cornwall was extracted from mere diluvial ores, or superficial deposits, it being only within a period comparatively recent that the system of mining was commenced which has since developed itself on a stupendous scale. The county was long known for its tin copper was extracted from it to any extent. But although this branch of the mining industry of Cornwall was the most recently developed, it is now the most extensive of all—the copper mines being the most numerous, and employing the greatest numbers of hands in the country.

The area of Cornwall, whether of tin, copper, or lead, are found in veins—these veins are called "lodes"; they run in very irregular lines, varying greatly in width, but all resembling each other in this respect, that no limit can be assigned to their depth. The two great features in the geological structure of the county are the granite and the slate.

In the granite the tin is generally found—in the slate—stone the lead; and the copper usually sit or near the junction of the two. In parts these different ores are found by themselves, in other places they are mingled together. Thus, from a particular lode copper, tin, or lead only may be extracted; or copper, tin, and lead may be found in the same lode; and when they are not so, the different lodes in which they may lie are sometimes so close to each other as to be within the bounds of one and the same mine; so that whilst one shaft of a mine may descend into a copper, that contiguous to it may penetrate a tin lode. It is thus that many of the mines, particularly in the west, are worked both for copper and tin.

The mining interest of Cornwall is, beyond all question, the most important in the whole county. The number of people employed in and about the mines, including our face and underground workers, was, in 1841, upwards of 37,000. On a calculation similar to those made on former occasions with respect to the number of persons dependent for support upon agricultural labour in particular districts, this would give about 87,000 persons as the number dependent upon mining operations for their subsistence. The importance of the mining interest will be appreciated, when it is considered that it supports nearly double the number of people maintained by agricultural labour in Cornwall. It is next to impossible to get at the number at present occupied in and about the mines; yet there is reason to believe that, though the population of Cornwall will show an increase of nearly 40,000 within the 10 years from 1841 to 1851, the number of those employed in and about the mines, and dependent on such employment, will not exhibit any very great increase. Indeed, but for the recent opening of the mines in the neighbourhood of Liskeard, and the activity with which mining operations are there at present pursued, the probability is that their number would have decreased.

In regard to mining, Cornwall is divided into three great districts—the western, the midland, and the eastern. The western comprehends the parish of St. Just and its neighbourhood. The midland has a larger range, extending from Hayle on the east, to the parish of St. Blazey, near Fowey, on the west. Fully one-half of this district is wild, uneven, and bleak, and scarcely adaptable for the lowest agricultural purposes. Its chief foci are St. Agnes, Camborne, Redruth, and St. Austell. The eastern district comprehends the mines in the neighbourhood of Liskeard, and those at Callington, on the borders of Devon. In all these districts, copper, tin, and lead abound in varying proportions—the copper being generally in the greatest quantity, except, perhaps, in the neighbourhood of St. Austell. Lead mines are worked to a limited extent in the neighbourhood of Liskeard—the chief mining operations in that quarter, however, being confined to copper.

As the main object of the present inquiry is to ascertain the condition and prospects of the labourer, I shall confine myself to a brief account of the practical working of the mines, with a view to the elucidation of the miner's duties, and of the different circumstances which more or less affect his lot and fortunes. Before doing so, it will be as well to premise that the term "miner" exclusively applies to those actually working in the mines—the capitalists, or those employing the miner, being known as the adventurers. Each mine is owned by a company of adventurers, the capital being divided into shares, which are marketable and transferable like those of a railway company.

To explain the process of mining, it is advisable to begin with the beginning; in other words, to follow a mine from its first establishment, until it is in complete and active operation.—The lodes generally manifest themselves, more or less, on the surface; but, even when the indications of ore are greatest, it requires a practised eye to distinguish them, for frequently the richest ores give the least token of their presence to the inexperienced observer. When there is reason to believe that a lode worth trying exists in a place not hitherto worked, a set of adventurers form themselves into a company for the purpose of working it. In doing so, their first business is to apply to the lord of the soil for a license to work the lode for a given time—sometimes for six months, but generally for a year—upon trial; the lord to receive a specified proportion, usually 1-15th, of the ore which may be raised during the period of the license. The lord also comes under an obligation, should the adventurers at the expiration of the license be disposed to continue the working of the mine, to lease it to them for a certain number of years, generally upon the same terms as those of the license, so far as his share of the proceeds is concerned. Should the project prove a failure, it may be abandoned at any time before the expiration of the license. This mode of paying the lord his dues is objected to by many, on the ground that it frequently operates harshly upon the adventurers. They urge, that however much the mine may be losing, the lord is always sure of a profit. Thus, if 15,000£ worth of ore is raised and disposed of, it is cost the adventurers 15,000£, to raise it. If, in that case, they paid the lord his 15th, the company would lose 1000£, instead of making a profit. But this would be equally the case were the lord, instead of his share of the proceeds of the mine, to receive a fixed money rent from the adventurers. Thus, if the fixed rent was 2000£, and the produce 15,000£, as in the case supposed, the loss to the adventurers would be 3000£, instead of 1000£. It is quite true, that, by the present arrangement, the lord is always sure of a profit, because he runs no risk; but that profit, like the profits of the adventurers, fluctuates with the price of copper, and when the price is low, the present bears upon them more lightly than any other arrangement.

The course here mentioned is that which is pursued when it is in contemplation to open up an entirely new mine. But it frequently happens that a new mine is opened within bounds already set out to a company of adventurers, and within which they are already working a mine. In such case no license is, of course, required. When a new mine is thus opened, the way is generally led by a party of miners, who undertake to try on the "tribute system," which will be immediately explained, either what they believe to be a fresh lode, or a portion of the lode already worked, but which the existing operations are not likely to reach. In the latter case the result, if the experiment is successful, is generally the sinking of some new shafts, which are soon connected with the existing works, whereby the scope of the existing mine is only enlarged. But whether an entirely new mine is to be opened, or the range of an existing mine is only enlarged, the operations commence by the sinking of shafts, and the construction of levels; these must be done ere the mine is in workable condition; and this brings us at once in contact with the actual work of the miner.

The miners are divided into two great classes—the surface and the underground miners. The latter are by far the most numerous, being fully 3 to 1, as compared with the former. The underground men are again divided into two separate classes, known in mining phraseology, as the "tummen" and "tributaries."

The tummen are those who do "for" work, which is neither more nor less than simple excavation.

In commencing a mine, therefore, the first is the first shaft, or adit, to be sunk.

They sink the shaft and run the levels—all the ore which may chance to be

as it proceeds downwards, generally to the north. If the underlie is not great, the shaft may, to a considerable distance, follow the lode. If it is great, the shaft descends, not in one continuous line, but as it were, by a succession of steps. It will be sunk perpendicular by several fathoms at a time, the hole all the time diverging from it to the northward. At certain distances holes are made, and horizontal courses run in the direction of the lode, until it is again struck. Each time the lodes struck the shaft is sunk again, the lodes to be reached again by a horizontal course as before. As the shaft is being sunk, the levels are being constructed. It is necessary that the reader should comprehend what these are, as on his doing so will greatly depend his comprehension of the operations which follow. To enable him the more readily to understand the internal arrangements of the mine, let us suppose both the lode and the shaft to be perpendicular.

The lode, as it is remembered, is neither more nor less than a crevice or fissure in the granite, or in the slate, or at the junction of the two, varying in width, and generally running from east to west. This crevice is usually filled with disintegrated granite, clay, or other soft matter, intermixed with which is the metal. Were the lode perpendicular, the shaft, in following it downwards, would be perpendicular also. The shaft is usually in the form of a parallelogram, about five or six feet wide, and about double that in length. The sides are almost invariably secured with woodwork, so as to prevent them falling in.

Down the middle, and dividing the parallelogram, as it were, into two squares runs a strong wooden partition, which in reality makes two shafts of it. One is for the raising of the ore and rubbish; the other is by which the miners have access to and egress from the mine. The levels are parallel courses, which diverge on either side from the shaft, and follow horizontally the course of the lode. These courses are at different distances from each other, but, generally speaking, they are not more than ten fathoms apart. Thus, after the shaft is sunk a certain distance, the first level will be run—in other words, a horizontal passage will be cut from either side of the shaft, following the direction of the lode. The height of this passage is usually from five to six feet. It is also commonly three feet wide, so as to give room for the operations to be conducted within it. This is the hole, however narrow the lode may be; nor is it frequently made any wider, unless the lode is sufficiently rich to warrant its being made so. There is no limit to the length of the passage or canal, but such as may be set by the superficial bounds of the mine. The shaft is then sunk, say for ten fms. more, when similar levels are constructed, directly under those allotted to. This operation may be repeated so long as the mine continues to yield wealth to induce the adventurers to keep sinking the shaft and constructing new levels. Some mines have attained a depth of 300 fathoms, so that they have about thirty different sets of levels, all ranging even beneath the other. When a new level is wanted, the shaft is first sunk to the proper depth, when the level is opened up. The *value* of a mine, under these circumstances, would be neither more or less than a perpendicular hole sunk in the lode, with a series of horizontal holes projecting into it, at regular distances from each other, from either side of, or at right angles to, the perpendicular one. It is obvious that, when the lode is not perpendicular, which is usually the case, and the shaft, instead of being continuous, consists of several steps, the levels will thus have the advantage of more than one outlet. Several shafts are sufficiently wealthy to induce the adventurers to keep sinking the shaft and constructing new levels. Some mines have attained a depth of 300 fathoms, so that they have about thirty different sets of levels, all ranging even beneath the other.

When the mine is extensive it is usual to sink several shafts. Thus, at the Carr Brae Mine, which has a superficial extent of a mile and a half in length, and about three quarters of a mile in width, there are from 20 to 30 shafts.

These shafts are often situated along the line of the lode, and are constructed to facilitate the operations of the mine, which would be much impeded were but one outlet, when the levels have been pitched back. When several shafts are constructed, the levels extending from one will run into those extending from another, so that the different levels will thus have the advantage of more than one outlet. Several shafts are sufficiently wealthy to induce the adventurers to keep sinking the shaft and constructing new levels. Some mines have attained a depth of 300 fathoms, so that they have about thirty different sets of levels, all ranging even beneath the other.

These observations apply equally to copper, lead, and the mines; and everything here described is necessary to be done before the mine is in working order. And all this is exclusively the work of the tummen. It does not necessarily follow that the tummen are the only ones who are engaged in the work. And this is the case, just as the shafts are.

From the explanation here given, it will have occurred to the reader, that between every two levels on either side of the shaft a deep belt of the lode intervenes. Thus, between the surface and the first level there is such a belt, as also between the first and second levels, &c. That between the first level and the surface is seldom worked to any great extent, but the others are, according to the richness and quality.

These intervening belts are called "winzes." A winze is a cutting extending from one level to another, and when perpendicular, which is not always the case, is just like the section of a shaft extending between level and level. This has the double object of facilitating the communication between the different levels, and of improving the ventilation of the mine. Sometimes, despite the presence of numerous winzes, the circulation of air is imperfect in a mine, that boys are employed below in working machines, which increase the current. The description of the internal economy of a mine would be incomplete without an allusion to what is known as the adit level. This is found in mines which are situated on the side of a declivity, and its chief object is to prevent the necessity of having to raise the water pumped from the mine to the very top of the shaft. The adit level may be the first, second, or third level of a mine, counting from the top, the depth at which it is ran depending partly upon the depth of the valley upon which it opens, and partly upon the nature of the portion of the mine above it, as to whether it is wet or dry. Thus, if a mine is situated on the side of a hill, and the shaft is sunk about 100 feet above the lowest level of the valley near the mine, the adit level will escape, and the expense of raising it to the top will be saved. The adit level is also used as an auxiliary to ventilation.

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sinking until it reaches the lower end. This dress still containing some metal is again washed, by being divided into other beds similarly situated, and the process is resumed until little but dress remains. In this way the tin ore is worked up to the requisite quality of 75 per cent. When the copper ore is not very rich, it also is put under stamps, and undergoes the process of washing. There are other operations, such as "digging," &c., all having in view the preparation of the ore for market. It is when sold, after it has been so prepared, that the tributary's earnings are determined, in ascertaining the net amount of which he has, of course, to deduct the wages of those employed by him on the surface for the preparation of the ore. Nor is this the only deduction which has to be made, as will be presently seen. The tin ore is not thus prepared at his cost, being generally bought of him at the top of the shaft, the adventurers working it up to the requisite point. Before considering the miner's wages, it will be as well to see him at work. To do so, if the reader will accompany me, we will descend a shaft together.

The mines are not all equally wet, but no one can expect to penetrate very far into a mine and emerge dry from it. We have, therefore, to go to the "shafting room," and attire ourselves in a miner's garb. It consists of a sort of thick flannel, with a stock coat over it, heavy shoes for the feet, and a hat generally made strong enough to "bear a good knock." We must also provide ourselves each with a candle. The candle is stuck into a piece of clay, which again is stuck upon the hat, which is of the "wide-awake" shape. Thus equipped, we descend the ladders. As we approach the shaft, we perceive a steam ring from it. This, we are informed, is the breath of the men who work below. The very mine itself seems breathless. These are, at least, 500 feet at work beneath our feet, at various depths, some 100, some 500, and others 1600 feet. The ladder is very narrow, with iron bars, and is well nigh perpendicular. The bars are moist and greasy, like the unknown depth of the shaft, and the almost perpendicular position of our means of descent. We bid adieu to daylight almost by the time we have reached the first level. There is no one at work in it, so we descend to the second. We pass it, and several others, until at length we reach the seventh level. We are then about 400 feet underground, a sufficient depth to bury St. Paul's. We take the level to our right, and pursue it until we reach the men at their work. There is a tramroad along the level, for "running the stuff" to the shaft, so that it can be raised to the surface. In some of the smaller mines this is done by boys with wheelbarrows, which, with the exception of working the ventilating machine, is the only purpose to which boys are put below. We proceed about 100 feet in a horizontal course, when we come upon the miners. When they take a pitch, they generally work it up, not down—that is to say, the men working from the seventh level work up towards the sixth, not down towards the eighth. Their object is to follow the lode, and extract the ore from it, disturbing as little of the non-metallic ground as possible. When the lode is wide enough, they work nothing but the lode, leaving the matter on either side untouched. A miner will thus work in a lode only 18 inches wide; but if it is narrower than that, he has to clear away some of the "country"—which is removing a sufficient quantity of the granite, slate, stone, or other substance, which may envelop the lode, to enable him to follow it. Those upon whom we have come are engaged at this work. They are preparing to clear away the granite by blasting it. The hole for the powder is made with a "bore," held by one while the other strikes it with a large sledge hammer. The latter is in a state of profuse perspiration, whilst the other is shivering with cold. They are both completely wet, as, indeed, we are ourselves. The man with the hammer has nothing on but his flannel trousers. The beatings of his heart, which are quick and strong, strike painfully upon the ear. He seems to be galloping through life—and so he is, for the miner is generally but a short liver. We leave this part of the level, and take on the other side of the shaft, which we follow for a considerable distance, until we come to a hole, through which we have to crawl on all fours. We then find ourselves at the bottom of a whine, which we pass, and pursue the level. The men have worked up for a considerable distance, making stages for themselves as they rise into the lode. The ore is carefully separated from the stuff, and is carried over the tramway to the shaft. Such is the merest outline of the work which the mine exhibits. Space will not permit me to go into details here. We return again to the surface. But to climb a series of perpendicular ladders, reaching as high as St. Paul's, is no joke. We take about half an hour to do it, resting at the different levels as we ascend. We arrive at the top utterly exhausted, and thankful that we have emerged again into daylight.

Such is the position, and such are the circumstances of the miners when at work. They generally relieve each other every eight hours, each gang working eight out of the twenty-four. Their tools are chiefly the sledge, the borer, and the pick, with the last of which they remove the dislodged granite, and other stuff, which do not require blasting. I one day overtook a tributary making for one of the mines near Redruth. He told me that he worked in the 300 fathom level—that is to say, 1800 feet below the surface. His engagement was to be on the ladders by six in the morning, and he emerged from the mine about five in the afternoon. Nearly two hours were spent in descending and ascending the ladders. At this period of the year, with the exception of the Sundays, he labours naked, ascending, every hour or so, to several fathoms above them, to dip themselves in some pools, which were comparatively cool. He was a tributary, and the tributaries look with as great contempt upon the tunmen, as the tunmen do upon the surface labourers. Indeed, a tributary will be on the point of starvation before he will take work. Some mines, like the Carn Brae Mine, employ about 1200 people; others more. The Cardon and other mines which have recently sprung up in the neighbourhood of Liskeard, afford subsistence to about ten thousand people, including the miners and their families.

It is not very easy to get at the earnings of a miner. The wages of the surface-workers are fixed and known, but the earnings of the underground workers depend, as to amount, upon so many circumstances that it is difficult to ascertain them. Throughout the midland mining district, particularly around Redruth, which is the centre of the most extensive mining district in the country, they have been receiving, for some time past, from 45s. to 50s. a month. At the Cardon mines the earnings are, on the average, about 10s. per month higher than those in the west. When these mines were established, a large migration of miners took place from the west, and whom no adequate houses accommodation had since been provided. The miners are thus not only compelled to huddle together in large numbers, but they have also to pay very high for the wretched accommodation afforded them. Many of them have left their families in the west, and cannot return, owing to the scarcity of cottages near Liskeard. They are consequently compelled to pay the expenses of two establishments. In addition to this, they have not the advantage of allowing a greater sum, so common in the west, in entitlement, which they could claim upon their leisure time, of which the miner has a great deal. All these disadvantages have necessitated a higher scale of wages in the east than in the west.

The wages, or earnings, are paid once a month; but, to keep the miners and their families going, a portion is paid on account once a fortnight. This is called their "subsidy" or, more commonly, "stirr." This is objected to by some, as tending to make men lazy. Where the farthing-pitch system is in vogue, it works very badly. In such case the men are not entitled to anything till the end of the first two months, and they do not get their subsidy until a fortnight before the day on which they are entitled to their earnings. The consequence is, that they work for six weeks without receiving anything. They are thus driven, by their circumstances, to go into debt with the retail dealers for the necessities of life. Once in debt, it is very difficult for them to get out of it, and reckless habits frequently supervene. The wages paid to the surface-workers are 8d. a day to women, and from 4d. to 6d. a day to boys and girls. At Cardon the women had, a short time ago, 1s. 3d. a day, but their wages have since been reduced to 1s.

[The foregoing forms part of a very interesting paper, which has been furnished to the *Morning Chronicle* by their reporters, who have been commissioned to prepare a series of communications, presenting a *bâton* view of the position of the labouring classes in all parts of the country. The conclusion of the article will appear in our next Journal.]

ACCIDENTS.

Dawley, Shropshire.—We have just heard that E. Ball was killed, and many more injured, by an explosion of fire-damp at the Southall pits.

Bedlington.—As G. Howey was ascending the shaft of Netherthorpe Colliery, in order to escape from the effects of a blasting, after he had got 8 fms. up the blast occurred, and having put his head over the side of the tub, it came in contact with a bunting, when he fell to the bottom of the shaft, and was dashed to pieces.

Wolverhampton.—A sad accident happened at Messrs. Cochrane and Co.'s Woodside Colliery, Hart's Hill, by which Joseph Wood, Jose Jones, Thomas Cook, and Richard Nicholas were killed. From the evidence at the inquest, it appeared that the deceased were engaged in the "band," when a large quantity of coal (stated at about 80 tons) suddenly fell from the workings upon them; on being extricated they were found quite dead.

Explosions at the Eskyr Colliery, Neath.—Explosions, by which a number of colliers, amounting in the whole, to about 20, sustained more or less injuries, occurred on Wednesday and Thursday last, at the Eskyr Colliery, on the Eaglesburst estate, worked by Messrs. Penrose and Evans. It appears that about three o'clock on Wednesday morning the working of the ventilator was suspended, in consequence of the disarrangement of the engine by which it is worked, and which required to be repaired. About six o'clock the men commenced working, but Griffin, the overman, it appears, cautioned them against going into certain portions of the colliery. A man named Arthur, however, disregarded the caution, having commenced working with a naked light. An explosion immediately took place, by which several men were burnt. It had likewise the effect of knocking down the air doors and brattices in the upper range or level of the colliery. In consequence of this circumstance, the ventilator was not worked at so great an advantage as it otherwise would have been—the passage of air through certain stails of the colliery being suspended. The ventilator (Strüve's) effectively prevented the return of the after-damp, which, upon such occasions, is usually so destructive. The Eaglesburst portion of the colliery continued to work without intermission. After the accident, men were immediately put to restore the doors and circulation of the air in that part of the colliery where the explosion had taken place. On Thursday morning, the men were again allowed to descend, and work in that portion of the colliery which was considered safe, with directions to work double, or two in each stall which was clear, until the doors and ventilation had been restored in the others. This, however, they refused to do, on the ground of being "in one another's way," and insisted on working in their own stalls, although two of the foremen endeavoured to use their authority to prevent it. The men declared there was no danger, as the ventilator was giving plenty of air; and at once, unfortunately, proceeded to an unventilated part of the colliery, some with naked lights, and some with lamps; the consequence of this reckless conduct was that another explosion ensued, more formidable than that of Wednesday, burning about 12 men, some severely, though not so bad as to apprehend that death will ensue. In this instance the adaptation of the ventilator was well tried, and the result was fraught with the most important consequences to the colliers, who, by their negligence and folly, narrowly escaped the fate of those who lost their lives in the colliery about 18 months ago; for there can be no doubt, that, had it not been for the ventilator, the men would inevitably have been suffocated by the after-damp. It is an unfortunate incident in connection with this accident, that several of the men suffered in consequence of the culpability of others, some of whom employed in repairing the doors having been burnt. The second explosion would unquestionably not have occurred, had it not been that, after Mr. Penrose and the overman had given explicit directions that the whole of the men (both those of the upper and lower ranges) should work two in a stall in the lower range, some of those who usually worked in the upper persevered in working in their own stalls, because their earnings could not be so much when working two in a stall. *Sussex Herald.*

PITMEN'S STRIKE, DURHAM.—On Wednesday last 11 pitmen from Ludworth Colliery were brought before the magistrates of Durham, charged with violently assaulting Wm. Treloar, because he accepted work at the colliery after they had left. He was most cruelly beaten, and the medical attendant was only surprised at his recovery, fully expecting concussion of the brain would have ensued from the severe injuries on the head, which had been inflicted with such an edged instrument as a coal rake. They were all fully committed for trial.

Lowe's PATENT SCREW PROPELLER.—In the Sheriff's Court, on Thursday, the proprietors of Lowe's patent screw propeller recovered a verdict of 75s. against the owners of the *Noveltysteamer*, for having infringed their patent.

THAMES TUNNEL COMPANY.—The number of passengers who passed through the Tunnel in the week ending Nov. 24, was—No. of passengers, 15,522.—Amount of money, £64 13s. 6d.

FOREIGN INTELLIGENCE.

SOUTH AUSTRALIA.—Additional papers and letters from the colony have been delivered during the week, by which we learn that money was scarce, but the market would be much relieved by the payment of the eighth dividend, of 5s. per share, by the Burra Burra Mining Company. The amount which would be put into circulation by this means is about £12,000, and, if continued quarterly, would prove a very considerable help to the colony. The price of the shares was 165s. to 170s. Since January, 1848, the fluctuations in their value had varied from 100s. up to 240s. The now smelting works at the Glen Osmond Mine were being prosecuted with promptitude. A lump of silver lead ore from the Wheal Gawler Mine had been exhibited, weighing 23 lbs. The Bremer River is reported to be rich in mineral deposits, and some fine samples of copper ore had been extracted. Considerable business had been done in Wheal Maria shares, the value of which had experienced much fluctuation. They rose from 10s. up to 12s., when a re-action took place, and they declined to 5s. 10s. Wheal Granger shares suddenly rose from 4s. up to 7s., and 10s. would have been paid if the shares could have been obtained. The cause of the advance in both instances originated from certain valuable and new discoveries of ore made in the mine. The following is the latest share table:—

Mines.	Shares.	Amount.	Paid-up.	Price per Share.
Adelaide	2000	£5 0 0	£5 0 0	£1 10 0
Burke	640	5 0 0	5 10 0	4 0 0
Burra Burra	2464	5 0 0	5 0 0	0 170 0
Enterprise	1000	3 0 0	3 0 0	0 170 0
North Kapunda	4440	5 0 0	5 0 0	0 15 0
Port Lincoln	600	5 0 0	3 10 0	6 0 0
Princess Royal	400	5 0 0	4 10 0	35 0 40 0
Provincial				4 0 0
Wheal Gawler	1280	10 0 0	10 0 0	18 0 0
Wheal Granger				11 0 0
Wheal Maria				7 0 0

CALIFORNIA.—There has been a considerable arrival of news from California during the week, from which we find that while gold continues as plentiful as ever, the implements and means of obtaining it are so unsuitable, and the labour so great, that hundreds find themselves woefully disappointed. The steamer *Empire City*, reached New York on the 10th November, bringing gold dust to the value of \$477,000 consigned, and the passengers about half a million. The advices from San Francisco are to the 1st Nov.; it is believed that the whole country, from San Diego to Cape Mendocino, from the Pacific to the topmost ridge of the Nevada, and probably across the great basin eastward, are more or less strewn with gold. A new placer had been discovered on Trinity River, where it is stated a man could gather \$100 a day. Gold dust is traced in the soil to the very coast, and the town of San Francisco stands on a deposit of gold dust; boys have picked \$4 and \$5 worth in a few hours, from clay taken from a well at a depth of 30 feet. Colonel Fremont has discovered on his estate on the Mariposa River a true vein of gold in the solid rock. The matrix is a reddish quartz, filled with veins of gold, and yielding about 2 ozs. every 25 lbs.; the vein has been traced more than 2 leagues, and at one extremity it contains quantities of native silver. Speculation in land for new towns which are springing up have made many rich; houses which cost \$500 before shipment realise \$3000. Provisions are still dear, as emigrants continue to pour in; and it is calculated that there are now 100,000 persons there. Rents continue enormous, but merchandise in general, unconnected with gold-seeking or food, is sold at prices ruinous to the shippers, and auctions take place hourly, but purchasers cannot be found. The harbour presents an unbroken forest of masts—ships from every nation, deserted by the crews, lying useless, many of which will never get home again. A very important piece of information is, that California is to be made a free state; no slavery to exist, except as a punishment for crime. A new pass in the mountains had been discovered by Lieut. Simpson, which would shorten the overland route from St. Louis by 300 miles. The following extract of a letter will give some idea of the pleasures of gold-seeking:—"I sleep out under a tree, or in the streets, as the mass of the citizens do. There is not a bed or bedstead in the whole city. In the outskirts of the city there are some 2000 emigrants camped. Men, women, and children, all sleep under the broad canopy of heaven, and drink the waters of the Sacramento." The Chinese are said to be quite *au fait* to Californian wants; houses are sent from Canton in considerable numbers—grotesque and crooked, as may be imagined, but for each of which the celestials manage to obtain \$1500. Timber and lumber is the only article of merchandise which is certain of paying a large profit for shipment. [Since writing the above, we have met with a most interesting original letter, from Mr. Kelly to the *Times*, who proceeded overland to California, which we rather prefer to postpone until next week, than mutilate it by giving extracts.]

VAN DIEMEN'S LAND.—Guano of excellent quality had been discovered on one of the lesser island dependencies of the colony. The Douglas River Coal Company has been formed, with a capital of 6000*l.*, in shares of 20*s.* each.

BRITISH MINING INTERESTS.

TESTIMONIAL TO MR. SHARP.

An advertisement in another column speaks for itself, and its object requires no recommendation from us. The only thing to be regretted is, that so long delay has been allowed, before an opportunity has been given to the county to acknowledge the valuable labours and services of one of the most earnest and useful defenders of its staple interests. We lost the battle, it is true, but so admirably was it fought, that Ministers could carry their object only by the exercise of official trickery and fraud, and we fear we must add falsehood, perhaps without a parallel. The arrangements and preparations for the parliamentary contest, and the duty of maintaining a watchful attention to the tricks of the enemy, as well as of furnishing our defenders in Parliament with the needful means to carry on the contest, devolved mainly upon Mr. Sharp, and were carried on, not without much labour and considerable expense. We have said that we lost the battle, but the expression refers only to the immediate result of the struggle, for in such contests there is a second object to be held in view—namely, so to contend, as to provide for a more successful issue on a future occasion. That occasion will arrive, ere long, and then we shall find our most effective weapons in the records of the former fight, which are preserved in our files, and which Mr. Sharp prepared and furnished. We will not divert attention from the more important contents of the statement by enlarging on the subject now; but we must be permitted next week to indulge ourselves with some further remarks on the general question of protection to the miner, and of our obligations to Mr. Sharp for his labours in connection with it.—*Cornwall Gazette.*

The well-sustained and determined opposition to the progress through Parliament of the bill for depriving the mining industry of England of protection, was among the most remarkable features of the last session. Every inch of ground was vigorously contested, every move of the opponents was met, and even anticipated, by the vigilant defenders of protection, and so closely were Ministers pressed, that they found it necessary to have recourse, if not to trickery and fraud, to the sharpest parliamentary practice. The wonder was how, where, and by whom, this watchful and sturdy opposition was organised—how honourable members, who could not be expected to enter into anything like detail on a subject so little understood, should be able to get up and dissect with minuteness, precision, and the most perfect accuracy, the sophisms and fallacies put forth in favour of the bill, and to bring forward so powerful an array of facts and reasonings against it. We knew there must be somebody, or a collection of somebodies, behind the scenes, to supply the ammunition and weapons, for carrying on this warfare; and who this somebody was is now known, as will be seen by reference to the advertisement in another column, for a testimonial to Mr. Joseph Budworth Sharp. Mr. Sharp's efforts on this question, and which were continued throughout the discussion, to the passing of the Act, must have involved much labour, as well as heavy expenses. We trust his claims will be duly appreciated by the public, especially by those to a watchful care of whose interests he so energetically devoted himself.—*West of England Conservative.*

PROTECTION TO MINING.—Our advertising columns, this week, contain an appeal to the mining interests of Devon and Cornwall on behalf of Mr. J. B. Sharp, of London, who was indefatigable in his exertions, and at his own expense, to prevent the passing of the Bill for removing the protecting duties upon copper and lead, and their ores. During the whole session of 1848, from the introduction of the Bill by Lord John Russell until the day of prorogation, when the Bill received the Royal Assent, Mr. Sharp was untiring in his endeavours to supply evidence against the measure, and strengthen the hands of the opponents of Free-trade. He has furnished an ample body of materials on this important subject, but finds himself poorer for his labours to the extent of more than 100*l.* Under these circumstances, an appeal is made to those directly interested in the question; and we have no doubt that the mere justice of the case will produce a beneficial response.—*Woolmer's Exeter Gazette.*

NEWBROUGH COLLIERY.—On the 15th inst., the inhabitants of Newbrough and the neighbourhood were aroused from their slumbers by the rejoicing of the workmen employed by Mr. Benson, of Allerwash, at his new colliery, near Fourstones station. They had cut the seam (5*f.* in thickness, and of excellent quality) during the night, and began firing cannon in the morning, which was continued at intervals during the day. In the afternoon upwards of one hundred of the workmen and their friends (not forgetting their wives and bairns) were plentifully regaled by Mr. Benson, with bread and cheese and ale, at the colliery, and also at Newbrough, where they spent the night in a pleasant and harmonious manner.—*Gateshead Observer.*

AN ULCERATED ARM CURED BY HOLLOWAY'S OINTMENT AND PILLS.—Mr. Robert Gregg, Jun., of Clinkerland, Clowes, Ireland, was sorely afflicted with a severe gathering in his arm-pit, and which discharged very copiously for nearly three years—another wound also broke out in his shoulder. His father felt alarmed, having consulted the most eminent surgeons to no purpose, while his son continued to waste away. At this juncture a friend advised a trial of Holloway's pills and ointment, which was done, and in six weeks they perfectly cured him; he is now getting fat and healthy; the sinews are restored to their wonted pliability, and no discolouration is visible. Sold by all druggists, and at Professor Holloway's establishment, 244, Strand, London.

THORNEYCROFT'S PATENT RAILWAY AXLES, RAILS, AND TYRES.

RAILWAY TYRE.—SECTION NO. 1, HALF SIZE.



The middle, or wearing, part of this tyre is composed of crystalline charcoal iron, the hardest and soundest iron made. The outward edges are made from a mixture of India charcoal pig with the toughest fibrous iron—the whole made upon an improved principle into one homogenous mass.

These charcoal tyres are warranted better and more durable than any tyres made in England.

Price—£15 per ton not at the works, up to 3*cwt.* each.

RAILWAY TYRE.—SECTION NO. 2, HALF SIZE.



The middle, or wearing, part of this tyre is composed of the best refined crystalline puddled iron.

The outward edges are of the best No. 3 fibrous iron, and put together upon an improved principle into one homogenous mass.

These tyres are warranted quite equal to any made in Staffordshire.

Price—£10 10s. per ton net at the works, up to 3*cwt.* each.

BEST STAFFORDSHIRE TYRES.—£8



THE MINING JOURNAL.

The Compendium of British Mining.

BY M. Y. WATSON, ESQ., F.G.S.

TREVISKEY AND BARRIER.—A correspondent of the *Mining Journal* last week, wished for information respecting these mines. It is to be regretted that, on two applications to the miners for general statistics, we have remained unanswered, and it will be impossible to give the quantity of ore returned from the commencement, dates of leases, &c. Treviskey adjoins the rich old mine of Tresavean, the Barrier being a piece of ground of about 5 fms. in width, separating the two mines, and three-fourths of it belonging to Treviskey. The water is drawn from the mine through Tresavean, for which a monthly sum is paid, and the mine worked at a comparatively small cost. In 120 shares price £130. to £140. per share, paying good but irregular dividends. In 1846 the profits divided among the shareholders amounted to 14. per share Treviskey, and 2. per share Barrier; 1847, 41. 10s. Treviskey, 7. 15s. Barrier; 1848, 17. 10s. Treviskey, 9. Barrier; 1849, Treviskey 26l., Barrier nil. The Barrier is now working at a loss, and, according to the dividends paid by Treviskey this year, the interest paid on the market price is about 17 per cent. From the sales of ore already made and in hand for the January dividend, and the very large sampling made for the March dividend, it may be fairly assumed the dividends next year will be greater than those paid during this.

WHEAL COMFORT TIN AND COPPER MINE.—In 128 shares, price 80/- per share; paying at the rate of 15d. per share per annum, or near 20 per cent.; the dividends already paid this year amount to 18d. per share.

[To be continued in next week's *Mining Journal*.]

Mining Correspondence.

BRITISH MINES.

ALFRED CONSOLS.—There has been a small quantity of the lode broken in Field's engine-shaft, sinking under the 60 fm. level. The shaftmen are engaged on fixing pitwork, but what has been done is quite equal to the former report. The driving of the 60 fm. level east has also been impeded by the same cause in some degree, but the lode in this still continues to improve, and, no doubt, from appearance, it will be quite equal to any one that has been discovered for a long series of years.

BARRISTOWN.—The new lode in the 18 fm. level end west is increased in size, but not producing so much ore as last reported—at present from 8 to 10 cwt. per fm.; the slopes in the back of this lode are producing about 9 cwt. of lead per fm. The lode in the 24 fm. level end, west of engine-shaft, is about 18 in. wide, and principally composed of blende, with a rich mixture of lead through it. We shall communicate this level with kiln shaft in the ensuing week, and we shall then employ the men to sink on this lode, as I expect lead will be found under the blende, which has been frequently seen.

The lode in the bottom of the adit, level, west of slide, is producing some ore raised by tributaries, but nothing very regular.

BRYN-ARIAN.—The lode in the 10 fm. level, driving west from the engine-shaft, is about 4 ft. wide, with several small branches of ore throughout; the men that were rising in the back of this level, east from the shaft, are now cutting down the part of the lode that was left standing; it is about 6 ft. wide, and will produce 1 ton of ore per fm.—we shall take this part of the lode down to the bottom of the 10 fm. level before we commence driving that level eastward. The slope in the bottom of the deep adit level, west of the engine-shaft, is yielding 15 cwt. of ore per fm.; the slope in the back of this level, east from the shaft, will yield 15 cwt. of ore per fm.; the slope in the back of this level, west from the shaft, produces 8 cwt. of ore per fm. The lode in the deep adit level east is 6 ft. wide, composed of killas, spar, and some good stones of ore. We are obliged to suspend all operations at Pensarn for some time, in consequence of the quickness of the water, as of late we have had a great quantity of rain in this part, and the men were kept nearly all the time drawing the water; but, if we could get a fortnight of dry weather, we should be able to see the bottom of the old workings: every part of the lode we have seen in clearing up this place contains ore.

CARTHEW CONSOLS.—When I reported on the upper mine on the 13th inst., it appeared as if we were within a few feet of the bottom of the mine, but it turns out we are only near a sollar, or temporary floor, over the 65 fm. level, to which we have now attained; and though we have not yet cleared none, or south of this point, I think we have in it another, and far more important one than any other level above, as in each level as we have got down, we find less ground worked away, and a greater abundance of ore. We have cleared the 45 fm. level south to the end, and driven it in new ground about 9 ft., where the lode proves very promising indeed, from which we had some tolerably good work yesterday. The lode in the end in the 25 fm. level south is also improving daily; small bunches of lead are continually dropping into it, and I doubt not, in a very short time, that we shall have a very good band of ore here. I intend to set some, not only new, but good pitches here in a few days; but the present tribute department has opened nothing new since my last. The ground in the lower mine for the past week has been somewhat harder than we have generally had it, which has, in a measure, disordered the lode; but, notwithstanding, we are making good approach towards that desirable object, the upper mine lode.

CWM ERFIN.—The general appearance of the mine has undergone a slight change for the better. The slopes in the back of the 20, 10 fm. east of engine-shaft, are worth for ore about 57. per fm.; 10 to 20 fm. east, worth 107. per fm.; 30 to 40 fm. east, worth 103. per fm. The mine under the 20 is worth 65. per fm. The 20, east of whin shaft, is out of ore. The 20, east of Robert's mine, is worth 157. per fm.; the 20, west of Robert's mine, is worth 157. per fm.; the slopes in the back of Robert's mine are worth 157. per fm. We sampled on Tuesday last 20 tons of ore.

DEVON AND COURTEENAY CONSOLS.—The lode in the end driving west in the 40 fm. level, on the gossan lode, is this week divided by a small course of killas in the middle, being altogether 3 ft. wide; the north and south parts contain white iron, &c., with spots of ore. The end driving east of the 50 fm. level, on the gossan lode, is 2 ft. wide, composed chiefly of spar and capel, with spots of ore. The shaftmen have commenced sinking the engine-shaft under the 40 fm. level, having completed all necessary previous work. The pitches continue to look well.

DYNGWYN (LEAD).—I beg to forward a report of the mine, which I should have done long before this, but for the great loss, as you are aware, I have sustained, connected with the other matters of dispute, which is just what I prepared for arbitration. In the 22 fm. level the engine-shaft is sunk 21 ft. 6 in. below in favourable ground, and the water easy; we are rising in the back of the west end towards the steel ore stopes; we are stopping in the back of the east end by four men; they are raising a little more ore than will pay all their cost. The 16 fm. level is cleared, and let go to water to the bottom; we find it sinking in the steel ore stopes about 1 ft. in 24 hours; by the end of this week I expect all dry. In the adit we are clearing the ore and stope left before, in which they say the ore is about 12 ton. In Jones's stopes we have a large and promising lead 6 ft. wide—a little ore at times; I do not fear, but that we shall raise a large quantity of ore from these stopes. The Young's cross-cut I expect to cut the lode in a few days—a large lode, and ore, which will pay for driving. In Cyfarthfa deep adit the cross-cut is not so favourable for driving, and the air is close in the end; the shallow adit is being improved, cutting 10 fathoms further east, where we think there will be a chance for the better. In Whitmore's cross-cut I expect to cut the lode under Edward's stopes shortly. Our last ore shipped, 3 tons, weighed 84. I have received information of the arrival of the new castings at Aberystwyth.

EAST CROWNDALE.—We beg to send our report of the mine, with a list of our settings on Saturday last. The 28 fm. level to drive east, by six men, limited 10 fm., or the month, let at 31. 10s. per fm.; the 28 fm. level to drive west, by six men, limited 9 fms., or the month, let at 31. 15s. per fm. The lode in each is worth 87. per fm.; and after one month's driving we shall commence stopping the back, which can be done for 21. per fm. Our pitwork, &c., is complete, and working well. The pitch in the back of the 17 fm. level is set to three men, at 9. 4d. in the 17.—the owners to dress the ore. We calculate that November ore will nearly cover the current cost; and should the ends continue in value as at present, we shall make a small profit for December. Our last parcel of tin left Plymouth on Thursday last, but no account of its arrival as yet at Truro. We are daily expecting to receive the samples and price of the last parcel of our ore.

HEIGNSTON DOWN CONSOLS.—The lode in the 20 fm. level, west of Hinchin's shaft, continues its size—viz., 3 ft. wide—composed of gossan, spar, peach, and a little carbonate of copper ore, altogether very promising. The lode in the 25 fm. level, east of the cross-cut, is much as last reported, a very kindly lode—the capels of which is being spotted with yellow copper ore; in the mine sinking below the bottom of the 35 fm. level, about 45 fms. from Bailey's shaft east, the lode is composed of the finest gossan, 18 in. wide, with spar, peach, and mudi. In the 45 fathom level we have cut another branch of spar, giving out water; but have not cut the north wall of the lode.

HOLMBUSH.—The lode in the 120 fm. level south is 5 ft. wide, composed of quartz, spar, and stones of lead. The ground in the 120 fm. level cross-cut south, towards the flap-jack lode, is not quite so favourable as it has been, nevertheless we consider good progress is making through it. The lode in the 110 fm. level south is 4 ft. wide, composed of quartz and stones of lead. The flap-jack lode, in the 100 fm. level, east of the great cross-course, is 3 ft. wide, and will produce 4 tons of copper ore per fm. We have received intelligence that a vessel will be at Calstock Quay to-morrow or Thursday, to take our parcel of lead ore.

KIRKCUDBRECHTSHIRE.—The lode in the 50 fm. west is still very large; the north part, for 11 ft. wide, is a strong mixture of lead, copper, and sulphur, and there is a good stone of ore coming in the middle part of the end again; the lode in the 50 fm. east is improving in size, and some good spots of lead coming in it again. The lode in the mine in the 50, west of Stewart's, is still large, and producing some good stones of ore; the mine in the 50 end is not down to the bearing ground yet. We intend shipping a cargo of lead again next week.

KINGSETT AND BEDFORD.—We are clearing up the leats in order to erect a water-wheel and crusher. There is an improvement in the mine sinking to the deep adit; but it will soon be in a position to stop.

MENDIP HILLS.—In extending the cutting towards the eastern part of the valley, at Charterhouse, I find the body of stuff which we are at present opening from 16 to 16 ft. thick, producing a fair proportion of both siliceous and limy, of good quality. At Ubley we have been engaged during the past week in removing some of the top rubbish, and fixing the machine plane, which rendered it necessary to stop the floors for a short time, consequently our produce of slate from this part has been but little. Blackmoor remains without any particular alteration, the stuff which we are at present removing to the floors not being very rich in slate. Our principal object here is to get at the bottom of the valley, this being done, I have not the least doubt you will have a great improvement both in the quantity and quality of the stuff.

RHOSWIDLLOD (LEAD).—On Saturday and to-day (Nov. 26) we are engaged measuring the different terrains. The slopes in the 10 fm. level have been better throughout this month, and have produced more lead than they ever did before. The

slopes in the back of the 17 fm. level have varied; the western slope has improved; the middle slope was similar to what it was before, whilst the eastern slope was not quite so good. The slope in the bottom of the 17 fm. level has improved, and is improving as we go down. The two slopes in the end of Smith's level have improved considerably; they are now nearly as good as the slopes in the upper levels. The lodes driving along the Augustus lode east are not so good, nor is the stone in the back of the same level. The slope sinking on the junction of the lodes in Smith's level is in a fine condition of ore, producing at about 100 per cent. more ore in a fathom than the best stone in the mine. The lode under the Augustus shaft is not all cleared, but will be in a few days. The ground has been a little easier driving north in Prosser's level; a branch of a lode has been just cut through, containing a little jack, spots of lead, and quartz. The wet weather has been very much against the ore-dressers for the last fortnight. The weight of lead dressed up to Saturday was about 4 tons; to do this they were only able to stand up occasionally, on account of the stormy weather. I am now engaged in letting, and will be to-morrow. You will receive the account on Saturday.

SOUTH WHEAL TRELLAWNTY.—The engine-shaft is sunk 19 fms. 4 ft. below the 30 fm. level, the stratum in which, especially for the last 4 fms., is everything we can wish for, being a dark blue killas, exactly like the stratification in the adjoining mines, where the lode is very productive. Having just met with this congenial ground for mining, we would strongly recommend the sinking to be continued to the 60 fm. level before the cross-cut west to intersect the lode; by so doing, the cross-cut would be shorter, and there would be a greater probability of meeting with a productive lode; but, when we reach the 60 fm. level, a plat must be cut, and the lift fixed, and a few fathoms driving east will intersect the sparry branch. We would, therefore, recommend that such

tin was broken, we, of course, may reasonably expect something of greater importance in our next level. In stopping at No. 2 shaft we have also a good lode going down. In driving the cross-cut to the north lode the ground is much softer; we set it at 11 fm. per fm., and expect daily to cut the lode. We have now in course to send to market our first batch of tin, which we intend to carry away in a few days; we calculate it to be from 4 to 5 tons.

FOREIGN MINES.

BOLANOS MINES.—The following is an extract from a letter from Mr. Birkbeck, dated 4th October:—I have the honour to acknowledge the receipt of your favour of 30th July, and beg to refer you to my respects of the 3d ult.

Celstina.—The produce of ore from this mine has diminished since last month, but I am still obtaining some pretty good ore (grueso and concentrated tama) from the Terreno.

Results of the Month.

Colatina Mine—loss.....	5149	6	2
La Granja Hacienda—profit.....	47	4	6
Net loss.....	5102	1	4

IMPERIAL BRAZILIAN MINES.—**Bonfim.** Sept. 3.—I have given the matter of a reduced force of Englishmen as much attention as possible during the short time I have been on the mines; it appears, as far as I can yet see, that it will be absolutely necessary to sink both Walker's and Gibson's shafts for the prosecution of Thomas's vein, these shafts, although large, are not of sufficient capacity to admit the required plough properly to command the drainage. I have, therefore, after consultation with the captain, decided to abandon the 20 English miners, as these shafts will be rather difficult to sink, from the enormous influx of water. I propose to employ six men in each shaft, and the other four in different places in the mine with other labourers; there will be also three, in addition to this number, retained at Gongo (two by night, and one by day), attending to the stamps, &c. I will take measures for the reduction immediately, several of the men being engaged merely from month to month, will not require much notice. You may rely on my sending forward every mine in my power, getting remunerative returns of gold, but I must beg to call your attention to the present state of the machinery at this place: from its efficiency and arrangement the water has only been drained as deep as the 14 fm. level, at Walker's, for a few hours, since my arrival here, nor do I see any chance of being able to prosecute the vein in the bottom of Thomas's shaft (which is now covered with 6 fms. of water) till an entire new arrangement can be made, both in the surface machinery and the pitwork; there is now a great deal of waste power of surface water, which, of course, we shall avail ourselves of; at present, we are lifting to the adit about 1200 gallons per minute, and, from calculations made of the pumps, which have been, and are at present in use, this is probably about as much as has ever been discharged. In my next despatch I hope to be able to send you sections, showing the present application of the fall of water, and the proposed new arrangements of the machinery, which I have no doubt you will approve of, as it is self-evident that, unless this be done, the attempted prosecution of the mine will be a failure; but, you are sufficiently acquainted with mining, to know that all lodes and veins are subject to great fluctuations, therefore, there is still a hope that the gloomy view taken by Mr. Henwood, of the mine generally, may not be a correct one. I find that we are entirely destitute of pumps (except those we use) of sufficient calibre for the unemployed 20-inch working barrel now at surface, and that ordered by you when I left England. It has become, therefore, necessary to employ several hired cars to bring in the requisite timber, as well as timber for the general use of the mine before the wet season, as the carriage during that period will be very difficult. I have placed a trustworthy person to superintend this part of the duty of the establishment, in order to ensure a sufficient supply. A great deal of iron will be wanted for hooping the pumps, there being none on the mine for the purpose. There are, however, several tons of scrap iron lying, principally at Gongo, which, by the assistance of a hammer mill, can be rendered useful; I, therefore, propose putting up a machine of this description at Gongo, that place offering the greatest facilities for the purpose, the expense of which will be trifling, as the wheel which has lain idle at Santa Gallo for several years will answer the purpose admirably. I am sorry to inform you that during the last ten days we have not found any work for the washing house. The wheel on the Magdalena vein has been very poor indeed, but is now showing symptoms of improvement, having taken from it, on Friday last, a tolerably good and promising sample. In driving westward on the big pump vein, nothing of importance has been discovered; the same may be said of the lode in the back of the 7 fm. level, at the 7 fm. level, east of Walker's cross-cut, the latter has been suspended as offering very little chance of discovery; another rise has been commenced a little further south, in the back of the same level, on the same vein. I wish you to bear in mind that nothing has been done towards prosecuting Thomas's vein in depth, it being impossible to keep the bottom of Thomas's shaft drained with the power and pumps now employed.

Gongo Seco.—In the early part of this week I visited this portion of your property, for the purpose of inspection, and have now thoroughly examined all the means afforded of re-opening the mine; and, after due consultation with Capt. Guy, decided that the best mode of proceeding is to lay open to the surface all the gold-bearing bed of jacutinga; this we have commenced, by employing the stream of water to wash away a large open space, which will be a cross-cut to the old mine; it has been commenced at the level of the top of Walker's stamping wheel, and will come into the mine at a little above the 14 fm. level, and thus laying open a large portion of what was formerly the richest part of the mine, and will, I hope, afford us sufficient supplies for a large stamping power for many years to come. During the carrying up of the open cross-cut, it is very probable that something may be discovered that will enable us to keep the stamps at work. We have, therefore, a large tank to receive the staff brought down by the stream—the light and muddy particles are carried away by the water, and the heavier parts remain behind in the tank; this we intend stamping, and I think it will yield tolerably good produce. It is the opinion of every one here acquainted with the nature of the Gongo formation, that this mode of working the mine will not disappoint us; and I have still strong hopes of success, notwithstanding the very different opinion entertained by your late chief commissioner. I have also commenced cutting down the brush wood, &c., in the western part of the mine, to make researches; and I think it very probable that resuming some of the old shafts will be found to be of great value in the washing house. The wheel on the Magdalena vein has been very poor indeed, but is now showing symptoms of improvement, having taken from it, on Friday last, a tolerably good and promising sample. In driving westward on the big pump vein, nothing of importance has been discovered; the same may be said of the lode in the back of the 7 fm. level, at the 7 fm. level, east of Walker's cross-cut, the latter has been suspended as offering very little chance of discovery; another rise has been commenced a little further south, in the back of the same level, on the same vein. Since my last letter, in which I mentioned our hope of raising some lead from the ground left standing near the wheel, we have discovered another small arch, which will, no doubt, produce several tons of lead, and some of the stones broken from hence, as well as some gossan, you will find in the box forwarded to Sorel for transhipment. There is a run in the level east of the Calavera; the wheel itself has been much choked also from a run, out of which we have, in clearing, saved ore to the extent of 4 to 5 tons, and we hope our further clearing will, also, contribute a portion of lead. We purpose preparing the small parcel of lead ore we have with such as we may add to it, and ascertain, as long, by actual experiment, what price is absolutely realizable for us in this district, and for our guidance in respect to further means in realising. If it be true that we shall find a quantity of lead ore on our reaching the third level, the time may soon come when we shall be in the market, and great attention must be given to secure the best means of realising the almost value to the company, which apparently can best be obtained by smelting; but this is a matter for calculation on and consideration, and dependent on the quantity we may be able to raise.

LINARES MINES.—The following letter has been received from Mr. Henry Thomas, dated Linare, Nov. 17:—It gives me much pleasure to inform you that we have forked the mine to the 30 fm. level this morning. We are assured that the excavations below the second level are not near so great as above, and we may expect also that the drainage from the country has much diminished, the latter being the cause of our originally considering the in-coming water to be more considerable than it now appears to be. Simultaneously with our getting the water to the 30 fm. level, we have hole the Calavera vein to the same level. Since my last letter, in which I mentioned our hope of raising some lead from the ground left standing near the wheel, we have discovered another small arch, which will, no doubt, produce several tons of lead, and some of the stones broken from hence, as well as some gossan, you will find in the box forwarded to Sorel for transhipment. There is a run in the level east of the Calavera; the wheel itself has been much choked also from a run, out of which we have, in clearing, saved ore to the extent of 4 to 5 tons, and we hope our further clearing will, also, contribute a portion of lead. We purpose preparing the small parcel of lead ore we have with such as we may add to it, and ascertain, as long, by actual experiment, what price is absolutely realizable for us in this district, and for our guidance in respect to further means in realising. If it be true that we shall find a quantity of lead ore on our reaching the third level, the time may soon come when we shall be in the market, and great attention must be given to secure the best means of realising the almost value to the company, which apparently can best be obtained by smelting; but this is a matter for calculation on and consideration, and dependent on the quantity we may be able to raise.

UNITED MEXICAN MINES.

Mine of Rayas.—To the usual monthly report of operations by Mr. Parkman, enclosed herewith, I have little to add, except my belief that the improvement noticed by him in the ends of San Cresencio and Santo Toribio, and in the new pit and roof opened on the ore left behind by the last-named end, is of a character to induce expectations of not only larger, but also more steady returns, being about to be derived from this portion of the mine than have been yielded for many months past, inasmuch as, independently of the good contents of gold, as well as silver, of the ore now extracting, the ground followed by the ends of San Cresencio and Santo Toribio, though in a diametrically opposite direction—the former being to the north-west and the latter to the south-east—is in a perfect virgin and unexplored state throughout the whole extent of the mine's territory, its present productive character to the north-west being a novel feature in the peninsula of San Miguel. Having partially exhausted the ore in the pillars of San Cayetano, the sales for mine account solely were proportionately less last month, while those on joint account with buscones maintained their previous amount, and the picked ore increased by 270 cargas, or 10 per cent., the quantity of the preceding month.

Mine of Aldana.—The reservoir alluded to in my last letter, having been completed, and proved efficient; the working of the shaft was resumed three weeks ago, and is now advancing with all possible despatch, as also the pit of Santo Toribio.

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GUNNIS LAKE MINING COMPANY.

A meeting of shareholders was held at the mine on Thursday, the 29th Nov., when the following report was read:—

No. 23.—The engine-shaft has been sunk 5 fms. 1 ft. since the last meeting, and is now 7 fms. 2 ft. under the 20 fm. level. The progress in the shaft having been much impeded by increased water, we were compelled to stop sinking, and fix a plunger-lift in the 20 fm. level, which is now complete, and has, I am happy to say, removed the difficulty; our operations, therefore, for the future, will proceed more satisfactorily. The lode in the shaft at present is 4 ft. wide, composed of flint-spar and muriatic, carrying a load of ore 18 in. wide, and will yield from 5 to 6 tons of ore per fm. The lode in course of sinking varied considerably in productiveness, yielding at times full 8 tons of ore per fm., and at others not more than good 4 fm.; the lode, however, now appears to be more settled, and wears every appearance of improvement. The lode in the 20 fm. level west (about 18 fms. from the shaft) is 2 ft. wide, principally flint-spar, but producing good stones of ore in places—a very promising lode. In the 20 fm. level east the lode is 3 ft. wide, carrying a load of ore on the north wall 18 in. wide, and a branch of tin about 14 in. wide on the south wall, its value in money being more than equal to 25/- per fm. I do not anticipate the continuance of the tin far from the cross-course, although it will leave, even at the present distance, many hundreds of pounds worth to be taken from the backs. I most cordially agree with Capt. Puckey's report of the 6th Oct., recommending the resumption of this level; the result now speaks for itself. I am also decidedly of opinion, that as this level is driven towards the great cross-course (the western cross-course in Devon Great Consols) the lode will increase in value, and leave backs that will afford ample returns for future samplings. We have sampled and sold since last meeting, 36 tons 4 cwt. 2 qrs. of copper ore, and have from 25 to 30 tons of good ore in course of dressing. The crusher is nearly complete, and will effect a considerable saving in the cost of preparing the ores for market. The machinery is all in good order, and the mine cannot but be said to be highly encouraging in every respect.

The adventurers appeared highly pleased with the prospects of the mine.

RUNNAFORD COOMBE MINING COMPANY.

The ninth general meeting of shareholders was held at the Black Eagle, Woolwich, on the 23rd November.—THOMAS CANHAM, Esq., in the chair.—The proceedings of the last general meeting were confirmed, and a statement of accounts for Sept. and October presented, showing—Balance in hand, as per last account, 315/- 9s. 7d.; received on calls, 179/- 18s. = 495/- 7s. 7d.—Cost for Sept. 164/- 10s. 10d.; October, 106/- 17s. 8d.—Leaving in bankers' and treasurers' hands, 229/- 19s. 1d.

The following report, from Mr. James Chenhall, was read:—

No. 21.—The lode in the backs is looking well, but is harder than it has been for some time, and is working by four men, at 12s. in the 17'; the tributaries have to pay all the cost attached to the same, and it is very likely they will do well. The reason why we did not sample at the time appointed is, because the tin was not all dressed up, and at that time we should not have sampled more than 2½ tons, but we shall sample 4 tons in the course of a few days. The engine would be in course of working in about three weeks, if the rods and pulleys were on the mine. I cannot assign any reason why the above materials have not come; I have written to Mr. West, but have not yet received the cause of delay.

It was resolved, that the purser, in future, receive 7/- per month for his services; that the services of Mr. James Chenhall be dispensed with; that the managing committee, in conjunction with the purser, do carry out the business of the company; and that any of the committee shall be empowered to visit the mine, inspect the books, bills, vouchers, &c., relative to the affairs of the company, without special permission from the chairman.

The meeting also unanimously resolved, that the rules, as published in the *Mining Journal* of the 13th October last, bearing on the "Cost-book System," be adopted, for the future guidance of this company.

TREGORDEN MINING COMPANY.

A special general meeting of shareholders was held at Liskeard, on the 14th Nov., to take into consideration the subject of erecting another engine; but after duly considering the following report, its erection was deferred, until the state of the 20 fm. level under Willcock's shaft, and the prospects of the lode in the said shaft, are ascertained:—

No. 14.—At the request of Mr. Pidgin, I inspected Tregorden Mine on the 8th instant and beg to present you my views of the same. I find that, from the commencement of the end of Sept. last, the quantity of ground (lode) taken away as follows:—Engine-shaft, 20 fms. 1 ft.; Willcock's do., 9 fms. 0 ft. 6 in.; north do., 8 fms. 1 ft.=37 fms. 2 ft. 6 in. Levels driven, 118 fms.; winze sunk, 7 fms. 1 ft.; ground stopped, 192 fms.—making a total of 354 fms. 3 ft. 6 in., which has produced 26 tons 0 cwt. 1 qr. 10 lbs. of silver-lead ore, amounting to 766/-, giving an average value per fm. of 24. 2s. 3d. It will be observed, that little more than one-half of the above ground has been stopped, the remainder being shafts, levels, &c., therefore more expensive. The average price per fm. for stopping the ground including drawing, &c., is 17. 3s. 3d., leaving a profit on stopping of 12. per fm., to meet agency, engine cost, &c. Hitherto the proportion of driving and sinking to the quantity of ground stopped is very large—there being now laid open by such drivings about 800 fms. of ground; great part of which, no doubt, will pay to take away. Present prospects:—In the 21 fm. level, south of the engine-shaft, the lode is 2 ft. wide, intermixed with silver-lead ore, and of a very promising character; in the level north the lode for some length is better in the bottom than in the back, and appears to be improving going down. The last 3 fms. driving has been in disordered ground; but in the present end it appears to be getting more settled and kindly; this end is 12 fms. short of being under Willcock's shaft. The 12 fm. level, south of the engine-shaft, is driven 11 fms. and suspended; the lode in the end is poor; in the north end, in this level, which is driven 63 fms. north of the engine-shaft (21) fms. north of Willcock's shaft), the lode is worth 4/- per fm. The same may be said of the lode all the way from Willcock's shaft. Willcock's shaft is sunk 6 ft. below this level—the lode in which is worth 6/- per fm.; it is at present suspended in consequence of water; but it is expected that it will shortly be drained by the 20 fm. level coming in under it, when the sinking will be resumed. The cost heretofore has been more in proportion to the returns than it will be for the future, working on the present scale, in consequence of the erection of machinery, pitwork, making dressing floors, whin, &c.; but at the same time, I would recommend that an engine of sufficient power be erected at once on the north part of the mine, where the appearances fully warrant such an outlay—there being in this part a very large and fine gossan for a great length, and no doubt it will make lead in depth. These circumstances, together with the appearances in the bottom of Willcock's shaft, and in the 12 fm. level going north of it, confirm me in my opinion of its turning out a favourable speculation, and well worthy of the outlay referred to.

WEST DOWNS CONSOLS MINING COMPANY.

The two-monthly meeting of adventurers was held at Tavistock, on the 26th November.—Mr. J. Sims in the chair.—The accounts produced, showing a balance in favour of mine of 572/- 14s. 4d., were allowed and passed. In consequence of the illness of Capt. Carpenter, the following report was furnished by Capt. Thomas Pauli, the under agent of the mine:—

No. 26.—The new deep adit level, in course of driving to intersect the Poldice tin lode, is now in about 25 fms.; the end is in a close blue killis, occasionally producing strings of copper ore. The stones in the back of the lode are yielding some fine work for tin. The quantity of tin on gold is estimated at 7 tons, and to be worth 48/- or 50/- per ton. There is a good deal of ore ground laid open, that could be set on tribute at from 5s. in 12.; and as soon as you can get some stamps to work, the mine, in my opinion, will pay well, and give good monthly profits.

WEST WHEAL SETON MINING COMPANY.

The usual bi-monthly meeting of the shareholders was held at the mine, on Monday, 27th Nov., when the statement of accounts was presented, showing—By sale of copper ores (less dues at 1-15th), 720/- 13s. 9d.; mine cost for Sept. and Oct., 294/- 4s. 1d.; leaving, balance carried on, 9s. 8d.; add, from last account, 104/- 8s. 10d.; shows, now on hand, 104/- 18s. 6d. The accounts having been passed, the following report was read:—

No. 27.—I beg to hand you the following report of this mine: the 50 fm. level is driven south of the engine-shaft 17 fms. and 13 fms. north; in this end a lode is cut, producing stones of ore; we have cut out to 18 in. The south shaft is sunk 2 fm. under the 55 fm. level; the lode to this shaft is large, producing stones of ore. The 55 fm. level east the lode is large, producing good stones of ore. The lode in the 30 fm. level west of the shaft, the lode is 6 ft. wide, and very promising. In the 18 fm. level west we have driven from the north part of the lode 15 fm. south, and have not yet cut the south wall; the lode is composed of calcarous and muriatic, and has not yet cut the south wall; the lode is west of the cross-course, we have cut into a lode 3 ft., but have not yet seen the south wall; it is composed of muriatic and spar, and has a promising appearance.

WHEAL ANDERTON MINING COMPANY.

A meeting of adventurers was held at Chubb's Commercial Inn, Plymouth, on the 27th Nov.—Capt. Tony in the chair.—The following statement of accounts having been presented, was examined and found correct:—

£ 2 0 0
Cash received of calls due April, 1848.....
Bills for the mrs (Sept. and October).....
Calls received, made 6th September.....
Total.....

£ 27 18 4
Labour cost, July, August, and September.....
Merchants' accounts.....
Carriage, freightage, &c.
Lords' dues to end of July.....
Agency and other expenses.....
Total.....

£ 27 18 4
£ 20 14 9
135 12 8
13 3 5
29 18 6
24 3 7
£ 740 1 3

Cash paid on account of Oct. and Nov., and part of past liabilities, £307 8s. 11d.—Leaves balance due to purser, £63 5s. 4d.—Calls to receive, made 6th Sept. and 6th Nov., on 240 shares, £554 5s. 4d.

The following report, from Capt. J. Pauli, was received and adopted:—

No. 27.—During my inspection this day, and last week, I paid particular attention to the different places in work, and some other points not in work at present. My first view of the lode was in the 90 fm. level east; here it is about 2 ft. wide, and tawny, with good and speedy ground to break, and opening lode which will set for tribute; in the same level west the lode has been disordered by a flock of spar, but it is now showing its character, it is likely to be very productive, though this level has not been so productive as was anticipated. The 60 fm. level east is extended a considerable distance from the shaft, as 1 ft. in the ground opposite the lodes, and Capt. Carpenter has ordered this level to be turned in the direction to cut them; the same level west looks a very kindly lode, but in consequence of the need of ventilation, Capt. Carpenter placed the men to rise against the winze sinking below the 70 fm. level; consequently the level is not driving at present, but in the rise is a large lode, full 2 ft. wide, and showing a good course of tin, from which a considerable quantity of work will be regularly breaking, but more

specially when the winze is hoisted to the rise. The pitches above the 80, three in number, are producing fair quantities of tin. The winze below the 70 fm. level is sinking in a good lode, and, when hoisted to the rise, will be a plan of much operation, both east and west, as in the 70 fm. level west is a very good lode. The 60 fm. level west has got into a slide; but, from the appearance to-day, I judge it is being opened up again; and from the character of the lode in the 70 fm. level, it is likely to be very productive; and on the whole I consider the mine looking much better than was the case some time since. With regard to the shaft and pitwork, everything appears in good working order, as well as the engines. The dressing department is now in a more comfortable condition—there being a good supply of water for stamping the ore. Before I conclude, I am glad to say that Capt. Carpenter, who has been very ill, is in a favourable way of recovery; but he requires much care lest he sustains a relapse.

It appearing to the meeting that there were still calls unpaid, it was resolved—that, unless the arrears be all paid by the 1st January, the shares should be forfeited at the next meeting, pursuant to the deed of regulations.

ESGAR LLEWELLYN MINING COMPANY.

A general meeting of shareholders was held at the offices, George-yard, Lombard-street, on Monday, the 26th November.

JOHN SALMON, Esq., in the chair.

The statement of accounts and report, as presented by the auditors, Messrs. Stride and Crofts, showing a balance of 183/- 3s. 10d. against mine, was allowed. A committee of management was appointed, who have opened an account for the share of the mine with the London Joint Stock Bank. A call of 10s. per share was made payable forthwith. Captain Barber, who was present, produced the following report, which was read and adopted:—

No. 23.—In compliance with your request, I beg to hand you my report of the above mine, with a detailed statement of operations since your last general meeting; also what I purpose doing in future. The winze is now 14 fms. below the shallow adit, and, for the first 8 or 9 fms. in depth, the lode is grey for about 4 ft. wide, and will, I think, yield, on an average, from 10 to 15 cwt. of ore per fm. The deep adit on the north lode is extended 56 fms. east of the cross-cut; the lode varying from 6 in. to 2 ft. wide, with a good gossan and piens, home to about 8 fms. of the present end. We found it necessary to leave the south part of the lode stand for 4 ft. wide, in consequence of its being so hard and wet at the same time; but for the last 4 fms. we have changed our course, and are driving on what, I think, will ultimately prove to be the caunter lode, which is running only 7½ fm. east of south, and from where it intersects the north lode if it has been most productive, and will yield, on an average, about 10 cwt. of ore per fm. We have about 8 fms. to drive to get under Morgan's winze. We have stopped on the south lode in the bottom is 4 ft. wide, and will yield, on an average, about 6 cwt. of ore per fm. The shallow adit level, on the caunter lode, is extended west from Morgan's winze 11 fms., and the lode is from 4 to 7 ft. wide; and, for 7 or 8 fm. length will yield, on an average, 10 cwt. of ore per fm., and has a very promising appearance. We are now driving east from the surface of this lode, and connecting it with the one west of Morgan's winze; the lode is 4 ft. wide, and is composed, principally, of a beautiful gossan, of the very first quality, and producing great stones of lead, and is full 10 fms. to the north of the north lode. We have also found this lode nearer the base of the hill, where the lode is looking quite as promising as at the level above. Now we have traced this lode for about 60 fms. in length, when they are 20 fm. apart; so I think it may now be concluded with safety, that there are two distinct lodes going west; and, judging from its general appearance, I think it will ultimately prove to be the most productive of either lode in Esgar Lleu. We are driving the deep adit on the south lode, east of the engine-shaft; lode poor, and disordered. We are sinking the engine shaft, which is now down 5 fms. below the adit level; and, from the end of March to the end of October, the cost of this mine, as per cost-sheet, has been 532/- 11s. 1d., which has been expended as follows:—Sinking, driving, and stopping 80 fms. 5 ft. 3 in., 280/- 19s. 9d.; labour, 47s. 3s. 5d.; carpenters and smiths, 24/- 1s. 3d.; masonry, 137. 9s. 7d.; barn work, 21/- 0s. 2d.; dressing cost, 4/- 1s. 10d.; merchants' bills, 63/- 0s. 6d.; agency, 39. 18s. 6d.; office expenses, 3/- 10s. 6d.; commission and sundries, 71. 18s. 1d. During this period we have raised about 20 tons of lead. In calling your attention to our future operations, I purpose, in the first place, to drive the deep adit on the north lode, as far east as Morgan's winze, which is from 8 to 9 fms.; secondly, to commence at once to drive a 12 fm. level from the surface, east on the caunter lode; and to sink a winze from the shallow adit to the 12 fm. level on the caunter lode, for communication, and cutting out ground for stopping; and as the engine shaft is now 5 fms. below the adit level, it will be advisable to sink the same to the 10 or 12 fm. level.

SOUTH WALES MINING COMPANY.

A general meeting of shareholders was held at the offices, George-yard, Lombard-street, on Tuesday, the 27th of November.

JOHN SALMON, Esq., in the chair.

The statement of accounts and report, as presented by the auditors, Messrs. J. Crofts and Stride, showing balance of 127/- 7s. 9d. against mine, was allowed. An arrangement was made, whereby an additional and valuable sett, called Dalwen, in consideration of 100/-, became the property of the adventurers. A committee of management was appointed, who have opened an account for the mine with the London Joint Stock Bank. A call of 5s. per share was made payable forthwith. The following report, presented by Captain Barber, was read and adopted:—

Bodell.—In accordance with your request, I beg to hand you my report of this mine, with a detailed statement of operations since your last general meeting, also what I propose doing in future. The workings in the old mine, on the north side, have been suspended. We are now driving a shallow west, on the south, or Froncogel lode, which is 8 feet wide, composed of gossan, slate, and spar, and has a promising appearance.—Dolmen: The deep adit, on the south lode, is extended 36 fms. east of the Elan River; the lode is 10 ft. wide, and getting stronger than before, being composed principally of quartz. For the last 7 or 8 fms. driving the lode is from 4 ft. to 5 ft. per fm. for copper ore. We are now rising west on the back of the deep adit to the surface for air, &c.; after this is done, we shall return to the lode, which is now down 3 fms. The lode is not yet taken down; and from the end of March to the end of October, the cost on this mine, as per cost-sheet, has been 216/- 10s. 10d., which has been expended as follows:—Sinking and driving 93 fms. 6 ft. 2 in., 131. 14s. 2d.; labour, 27. 15s. 7d.; carpenters and smiths, 31. 10s. 6d.; masonry, 24. 1s. 6d.; hardware, 6. 2s. 6d.; dressing cost, 2. 19s. 6d.; merchants' bills, 27. 4s. 6d.; agency, 29. 18s. 6d.; office expenses, 3. 10s. 6d.; commission and sundries, 51. 18s. 1d.; during this period 8 tons 2 cwt. of lead have been sold. In calling your attention to our future operations, I propose, in the first place, to drive the shallow adit west, on the south, or Froncogel, lode, as far as we can prove its general character; and the deep adit on the south lode, east of the Rhymney River; also to drive a level 10 or 12 fms. above the deep adit, to prove the lode, and for communication; and as soon as the rise in the back of the deep adit is hoisted to the surface, to resume sinking the winze under the deep adit; and when at the depth of 10 or 12 fms., should the lode prove productive, I would advise the sinking of a shaft, to take the lode at the depth of 40 or 50 fms. below the deep adit.

CWM ERFIN MINING COMPANY.

The adjourned meeting of shareholders was held at the offices, George-yard, Lombard-street, on Tuesday, the 27th Nov., JOHN SALMON, Esq., in the chair.

The accounts have been audited by Messrs. Stride and Crofts, and their report, showing a balance against the mine, to the end of August, of 159/- 11s. 2d., was allowed and passed. A committee of management has been appointed, and an account to be opened with the London and Joint Stock Bank as soon as the call of 10s. per share made on the 6th Nov. shall be paid. The report will be found under the head "Mining Correspondence."

It appears that a series of statements had been made by the superintendent of the mine, but which upon investigation could not be substantiated in any way, and, in consequence, the adventurers unanimously resolved on dispensing with his services. It is to be hoped that the measures adopted by the present meeting will have the tendency of producing beneficial results, and that agents who are amply paid for their services, will strictly confine themselves to their legitimate duties, and make their estimates upon correct data, and not for the sake of affording mere temporary satisfaction to shareholders, promise more than they can perform, which must inevitably tarnish any previous well-earned reputation.

CONSOLIDATED.—At the two-monthly meeting of adventurers, held at the mine on the 21st November, the accounts were examined and passed, showing—Copper ore sold Sept. and Oct. (less lord's dues), 835/- 19s. 4d.; tin ditto, 143/- 16s. 11d.; arsenic, 311. 18s. 3d.=8582/- 14s. 6d.—By labour cost for Sept., 182/- 14s. 2d.; tributes' balance, 1487/- 0s. 2d.; labour cost for October, 1470/- 12s. 6d.; merchants' bills, 2583/- 18s. 10d.—leaving profit, 1758/- 13s. 10d.; to which add balance from last account, 660/- 0s. 3d., makes 2418/- 14s. 1d.; from which deduct dividend, 10/- per share, 960/- leaves in hand, 1458/- 14s. 1d. I would advise the sinking of a shaft, and for the lode to be hoisted to the surface, to resume sinking the winze under the deep adit; and when at the depth of 10 or 12 fms., should the lode prove productive, I would advise the sinking of a shaft, to take the lode at the depth of 40 or 50 fms. below the deep adit.

EAST BULLER.—At a meeting of adventurers, held on the 16th Nov., the accounts, as follows, were presented, and a call of 10s. per share was made.—By balance in hand Sept. 30, 557. 12s. 7d.—To costs and merchants' bills for Aug. and Sept., 220/- 2s. 7d.; steam-engine and pitwork, 337/- 10s. = 557. 12s. 7d.

PROVIDENCE.—At a meeting of adventurers, held at the mine, the accounts were examined and passed, showing—Labour cost, August, September, and October, 1556/- 2s.; carriage, 42/- 2s. 6d.; merchants' bills, 619/- 2s. 10d.; lords' and boudoirs' dues, 249/- 11s. 7d.=2466/- 19s. 11d.—By tin sold, 98 tons 10 cwt. 1 qr.

Current Prices of Stocks, Shares, & Metals.

STOCK EXCHANGE, Saturday morning Eleven o'clock.			
Bank Stock, 7 per Cent., 201	100	100	100
3 per Cent. Reduced Ann., 94½	100	100	100
3 per Cent. Consols Ann., 93½ 4½	100	100	100
3 per Cent. Ann., 93½ 4½	100	100	100
Long Annatiles, 8½	100	100	100
India Stock, 10½ per Cent., 260	100	100	100
3 per Cent. Consols for Acc. 95½ 8½	100	100	100
Esche. Bills, 10000, 14d. 49 47 50 pm.	100	100	100
Mexican 5 per Cent., ex Coup., 27½	100	100	100
Russian, 5 per Cent., 110 9½	100	100	100
Spanish, 5 per Cent., 10 9½	100	100	100
Ditto 3 per Cent., 38½ 9½	100	100	100

MINES.—The share market continues in a very gratifying position, inasmuch that the demands for shares generally are not responded to, but at advanced prices. We learn, not only from our local correspondents, but from several parties who have visited the mining districts in the west, that the mines generally assume a very encouraging aspect, and that a considerable degree of activity prevails throughout. The apparent firmness of the metal market, and the many important improvements which have taken place, have given a manifest impetus to this valuable adjunct to our great commercial and national interest.

Devon Great Consols have been done at an advance on last sales.

Since the East and South Tamar Mines meetings, held on the 24th November, a large number of shares have changed hands at an advance, and inquiries for these shares are still maintained. Our last quotations appear to have been rather under the average market prices.

South Basset, Trelawny, Mary Ann, South Frances, Trethellan, Great Consols, and Conduor, are among the shares now in request.

Alfred Consols and Wheal Treminayne are stated to be in a very gratifying position, and the discoveries in the former are highly important.

Trecroft shares have been dealt largely in, and yesterday advices were received of an improvement in the 90 on Chappel's lode, where it is worth 40d. per fm. Tamar Consols have also been in request—the present profitable position of each mine affording every encouragement to purchasers.

Bedford United assets were stated, in our last week's Journal, at 4978L 11s. 8d.; it should have been 5206L 0s. 4d. The sum of 227L 8s. 8d. was omitted, being an amount due, for which a steam-engine is held as security. Another dividend of 5s. per share may be anticipated at the next bi-monthly meeting in January.

An improvement is reported in Trengolden, and shares have been inquired for. West Wheal Jewel, Kirkcudbright, Mary Ann, and Conduor have also been in request, from the improvements which have recently taken place.

We learn that the list of shareholders in the Trethevy Mine (late Caradon Copper) is rapidly progressing towards completion, and that a large proportion of the former holders have signified their desire to continue their interest, with an increased number.

Shares in the following mines have changed hands during the week:— Devon Great Consols, South Basset, West Wheal Jewel, Trethellan, Bedford United, East and South Tamar, West Caradon, Conduor, Stray Park, Tremayne, South Frances, Mendip Hills, Trelawny, Treleigh, Kirkcudbright, Alfred Consols, Mary Ann, Tamar Consols, Daren, Timcroft, Trengolden, Callington, West Providence, &c.

In Cornwall, we find that North Pool, Stray Park, Wheal Seton, East Pool, Confort, West Seton, East Buller, Great Consols, West Buller, and other leading shares, have changed hands.

At the Great Consolidated Mines bi-monthly account a dividend of 10s. per share was declared. The profit on the two months of September and October amounted to 1758L 13s. 10d.; and the balance in hand, after payment of dividend, is 1458L 14s. 1d. The mines are represented to be looking very well.

At the Providence Mines meeting, a dividend of 112s. was made, being 10s. per share; the profit realised during the three months amounted to 1432L 15s. 5d. After paying the balance of 216L 10s. 1d. against the company at last account, there remains to credit 96L 5s. 4d.

At the Wheal Margaret meeting, for the quarter ending September, a profit of 2029L 8s. 8d. was shown from the sale of about 117 tons of tin. A portion of about 50 tons had been reserved during the previous quarter, in consequence of the depressed price of the metal. A dividend of 12s. per share, amounting to 1344L was declared, and a balance of 194L 9s. 2d. carried to credit of next account, after discharging the debit of 491L 4s. 6d. found against the mine at the last account.

Esgair Lleu (South Wales) Mining Company and Cwm Erisi meetings were held on Monday and Tuesday last, when some more efficient arrangements were entered into, and committees of management formed for each mine. The prospects were represented to be very encouraging; and when the newly-adopted measures come fairly into operation, the results will, doubtless, prove beneficial.

At Wheal Anderton meeting the accounts showed—Ores sold 419L 3s. 11d. with a balance against mine, 53L 5s. 4d., and calls to receive, 281L 2s. 8d.

At West Downs meeting the accounts showed balance in favour, 57L 14s. 4d.

At the East Buller meeting a call of 10s. per share was made.

At the Wheal Reeth meeting, the accounts showed—Costs and merchants' bills, 673L—By tin sold, 508L 7s. 7d.; calls, 208L 10s.—leaving a balance against adventurers, of 540L 8s. 2d.

At the West Wheal Seton meeting, held on 27th Nov., the accounts showed—Copper ores sold, 720L 13s. 9d.—Labour cost, merchants' bills, and materials, 720L 4s. 1d.—leaving balance, 9s. 8d.; to which add balance last account, leaves in hand, 104L 18s. 6d.

At the Caradon Wheal Hooper meeting, the resignation of 49 shares from different parties was accepted, and six forfeited; Mr. Joseph Ottow was appointed purser. A call of 2s. per share was made payable in 14 days. The accounts showed a balance against the mine of 505L 9s. 1d.

At the Runnaford Coombe meeting, the accounts showed cost for Sept. and Oct., 27L 8s. 6d., and a balance in favour of adventurers, 223L 19s. 1d.

At the Wheal Hennock meeting, a report from Captain James was read, in which he informed the shareholders of some extraordinary discoveries of lodes, made up of rich gossan, containing silver, copper, and carbonate of lead; and states that there are thousands of fathoms of ground from which these minerals may be raised at great profit, and for which a good market has been discovered. A call of 5s. per share was made.

In foreign mines there has been some considerable business done in United Mexicans, arising from the important advices received by the Mexican mail. St. John del Rey, Copiapo, Imperial Brazilian, Cobre Copper, Alten, and National Brazilian, have also been done. Letters have been received by the Imperial Brazilian Company, which are given in detail in another column. The Bolanos report to the 4th October contains nothing very encouraging.

The Alten annual meeting was held on Friday. The result of the year ending 31st March last was a loss of 588L 6s. 8d. The assets of the company in cash and goods in London and Alten, at that time amounted to 9053L 9s. 6d. A considerable increase in the returns had taken place—being 88 tons of copper in the six months ending 30th Sept. Fresh discoveries had been recently made, and an early dividend expected.

At the Gondalcanal meeting, much discussion took place as to the best means to be adopted to raise some capital immediately, as the shares created at the last meeting were not taken up by 70%. The meeting was adjourned to the 15th instant.

The Asturian meeting report will be found highly interesting; and it is to be hoped the company are in a fair way for resuscitation. We refer to the report, which is given at some length, and to some remarks, in another column.

Advices have been received by the United Mexican Company, from which it appears that considerable improvements have taken place in the mines of Rayas and Promontorio; the shaft in Aldana was proceeding with all possible dispatch to cut the vein, which is 30 varas wide, at 145 varas in depth. In general the prospects were highly promising; remittances have been advised, in gold and silver, to the amount of \$86,120 forwarded by the conducta, and a bill for 1200L has been received. The mines in Mexico generally are, at the present moment, causing much interest, particularly in the district of Guanajuato, which is at present exciting great astonishment on account of its riches. The Mint is coining upwards of \$200,000 per week. Near La Luz Mine there is already a town of 25,000 inhabitants. The mine of Santa Lucia, from the first week in January to the 8th of September (36 weeks), has given a net profit of \$1,684,000. The lode is 18 varas wide, and 40 pair of men work abreast in each end. The extraction is from 7000 to 8000 cargas of over per week, averaging a ley of 25 marcas per ton of 32 quintal. The most curious thing in this mine is, that at 800 varas depth there is no water, and the miners are obliged to take down water in order to bore. A mine called Promontorio, contracted by the United Mexican Company is very promising; and at another they have called Aldana, the vein is 30 varas wide, and a shaft is being sunk to cut it at 145 varas depth.

The following arrivals of specie have taken place since our last:—Her Majesty's ship, *Constance*, arrived at Portsmouth, on Saturday, from the Pacific, bringing on freight \$2,000,000 in gold, principally from California. The Peninsular and Oriental steamship, *Jupiter*, arrived on Sunday, having brought on freight nine packages of specie; and the same company's ship, *Ripon*, arrived also on Sunday, bringing 76 packages of specie, value 20,000L. The Royal Mail steamship, *Twiss*, arrived on Tuesday, with the usual West India and Mexican mails. She brought on freight \$300,660 on merchants' account, 8112,700 for account of the Mexican bondholders, gold coin, gold dust, and 1917L ss. in silver bars—total value in specie, 84,667L.

HULL, THURSDAY.—The share market has improved, both as regards prices and amount of business done,—partly in consequence of the reduction of the rate of discount by the Bank; although, singular to note, the first effect of that measure was to make some stocks worse.

Initial new June 1849. Issued by the Royal Bank of Scotland, W.—Advertisement

PRICES OF MINING SHARES.

BRITISH MINES.					
Shares.	Company.	Paid.	Price.		
1000 Abercrombie	9	9	256 Rosewater Consols	—	12
1024 Alfreton Consols	8½	12	2043 Kinsaleford Consols	—	5
1024 Ashton-under-Lyne	5½	12	9000 South Tamar	—	2½ 2½
1024 Balaesigden	5½	12	128 South Carron	—	200
128 Barnsley Consols	42½	50	1100 South Lakewood	—	5
1000 Barristown	52	11 2	256 South Poldark	—	12 12
3650 Beaufort	—	—	256 South Totnes	—	70 80 82
6000 Beauly	1	—	256 South Trelawny	—	38
1000 Benthall	2½	4 4½	2000 South Wales Mining Co.	—	1 1 14
1280 Birch Tor & Villier	102	62 7	2000 South Wind. Bassett	—	204 400 420
2000 Black Craig	6	10	128 South Wh. F. Range	—	300
3000 Blissworth	50	10	124 South Wh. Josiah	—	11 5 6
1000 Blidland Consols	1	5½	9600 South Wh. Maria	—	21
1000 Botallack	182	30	1000 South Wh. Maria	—	21
120 Brower	5	—	10000 South Wh. Maria	—	14
256 Brimpton Tin	24	24	10000 Southern Western Irish	—	24
10000 British Iron, New Regia	12	—	280 Spears Moor	—	30 40
— Ditto ditto, scrip	19	19	94 St. Ives Consols	—	60
2400 Bry. Asian	2	6 6½	999 St. Minver Consols	—	6
107 Buckland Consols	52½	10 12	1000 Stray Park	—	23 23
1000 Callington	22	7 8	1024 Tavistock Consols	—	4 8
1000 Camborne Consols	7	7 10	1024 Tavistock Consols	—	8 8½
1000 Camerton's Steam Coal	7	1	1024 Tavy Consols	—	6 8
2500 Cardigan Mines	224	19	1024 Tavy Consols	—	6 8
2500 Carnon United	24	5 8	1024 Tavy Consols	—	6 8
2500 Carnon Wh. Hooper	21	44	1024 Tavy Consols	—	6 8
1000 Carrick Consols	15	105	1024 Tavy Consols	—	6 8
3000 Cartwheel Consols	13	7	1024 Tavy Consols	—	6 8
114 Charlestown	220	—	1024 Tavy Consols	—	6 8
500 Combe Llwyn	52	44	2000 Trenance	—	3 8 8
128 Confort	45	88 100	2000 Trenance	—	10 20
2500 Coudron	20	88 90	2000 Trenance	—	10 20
2500 Cook's Kitchen	14	24 3	2000 Trevelyan	—	12 15 17
1000 Coombe Valley Quarry	41	5	1000 Trevelyan	—	12 15 17
1000 Copper Bottom	14	6½	1000 Trevelyan	—	12 15 17
900 Court Garage	7	10	1000 Trevelyan	—	12 15 17
212 Crookston Moor	234	5	1000 Trevelyan	—	12 15 17
128 Cres. Braws	120	30	1000 Trevelyan	—	12 15 17
600 Culbert Mine	125	—	1000 Trevelyan	—	12 15 17
1000 Cwrt Eruin	54	2 22	1000 Trevelyan	—	12 15 17
7100 Derwent	84	5	1000 Trevelyan	—	12 15 17
845 DevonCourtney Co.	72	14	1000 Trevelyan	—	12 15 17
1024 Devon Great Consols	1,678	192	1000 Trevelyan	—	12 15 17
1000 Diorwedd	20	30	1000 Trevelyan	—	12 15 17
182 Dolcoath	30	15	1000 Trevelyan	—	12 15 17
2500 Drift Walls	54	3	1024 West Wheal Consols	—	24
7100 Dervent	84	5	1024 West Wheal Consols	—	24 28 30
2500 Devon Great Consols	1,678	192	1000 West Wheal Consols	—	24 28 30
1000 Dewarton	20	30	1000 West Wheal Consols	—	24 28 30
2500 Dwyngwyn	10	10 12	1000 West Wheal Treasury	—	24 28 30
512 East Arreymoor	54	6	1000 West Wheal Treasury	—	24 28 30
2500 East Birch Tot	3	3	1024 West Wheal Treasury	—	24 28 30
1024 East Buller	1	34	1024 West Wheal Treasury	—	24 28 30
112 East Caradon	47	47	1024 West Wheal Treasury	—	24 28 30
2048 East Crowndale	64	4			

NOTICES TO CORRESPONDENTS.

* * We must impress upon our correspondents, the necessity of invariably furnishing us with their names and addresses—not that their communications should, consequently, be noticed, but as an earnest to us of their good faith.

BLOOMFIELD IRON-WORKS, TIRTON.—We have received the following communication from Messrs. Barrows and Hall, of these works, on the subject of our reply to "J. S." (Neath), in the *Mining Journal* of the 17th November, which we most readily insert. They say:—"In your paper of last Saturday, under the head of Notices to Correspondents, you have the following:—*J. S. (Neath).*—The original manufacturers of the B.B.H. iron, were Messrs. Bradley, Barrows, and Hall, of West Bromwich. Some of the parties are dead, and the partnership is dissolved; but iron of the same mark is still made at the foundry; and which, we beg to say, is not a correct answer to your correspondent's question. The works where the B.B.H. iron is made has always been, and still continues to be, as above. It is true that the senior partner, Mr. Bradley, is dead, but no dissolution of partnership between the surviving partners of the firm of Bradley, Barrows, and Hall has ever taken place; but the business has been continued by them without interruption." We received the correction to late for insertion in last week's *Journal*.

THE CHAINS OR COMPOUND BARS OF THE BRITANNIA-BRIDGE.—Our correspondent, Mr. W. Radley, calls attention to some remarks of Mr. Robert Stephenson at the proceedings of the Institution of Mechanical Engineers, published in our last, in which it is stated that the chains, or compound bars, employed for lifting the tube of the Britannia-bridge were 10 inches square, and each 100 feet long;—while in the *Mining Journal*, of August 4, we stated that they were "composed of links 7 inches broad by 1 inch thick, and 8 feet long, bolted together in sets of 8 and 9 links," and wishes to know how these two statements can be reconciled. There certainly is a discrepancy, which is still further increased by reference to Mr. Fairbairn's work, where the links are 10 inches long. We should expect Mr. Stephenson intended to convey the idea that the sectional area of the united links was equal to a bar of iron 10 inches square, or 100 inches area; as to their being 100 feet long, of course he means the whole length of the chains or compound bars. We should, however, feel obliged to any of our correspondents for the exact dimensions of these monster chains. On the same paper Mr. Radley writes:—

"Appertaining to Mr. McConnell's paper, in your last, on the vibrational changes in axles, I would observe that the smooth oscillatory motion of a railway connecting rod does not stand by any means as an apt simile against an axle subject to concussional and jarring vibration, which is the case with the class of axles most prone and subject to molecular changes from fibrous to crystalline—that is, cabriole, chaise, dog cart, and axles of similarly used carriages, respecting the primary fibrous and subsequent crystalline constitution of which no question can be entertained. The fracture of such axles is not always, though generally, close to the inner border of the axle box; but I have seen them break in the middle of the axle, where it is most affected as a spring, and always crystalline or micaaceous. Whether this undoubted change in the molecular constitution of iron axles be brought about by often-repeated concussion and jolting vibrations, or by other occasions, which I intend shall form the subject of an entire monograph, I do not at present attempt to decide, although I can assert one thing—viz., that the atomo-molecular and corpuscular constitution of iron once well understood, little stretch of mind is required to enable us to believe in this mooted change."

"W. H." (Old-park, Shifnal).—We have ever set our face against all the California gold mining and trading schools, and particularly the one in question. We, however, see no reason why adventures in California, conducted with proper forethought, energy, and honesty, should not succeed; and we have no doubt many will, ere long, become highly prosperous; but whatever promises are held out in a prospectus (and the more glowing they were the more cautious we should be), or however respectable may appear the names attached to it, we can only say—be wary! look before you leap.

"A Constant Reader" (Aiston, Cumberland).—The question of our correspondent is a difficult one, not do we exactly understand his position. If it is merely a scrip company, there are surely some rules and regulations to abide by, and which should be, and generally are, endorsed on the scrip. If such is the case, and "A Constant Reader" can find a purchaser, we see no difficulty in the matter; us, without any "co-partnership agreement, or written regulations as a guide" (a rather unusual mode of establishing a company or partnership), we do not see how the consent of all the shareholders can possibly be necessary to enable him to part with his interest. Probably there are liabilities against the company, which it is not wished he should be discharged from.

"J. M." (Chesterfield).—The address of Messrs. Nesbit is 38, Kannington-lane, Lambeth. A Regular Subscriber" (Glasgow).—The suit of Warner v. the Copper Miners' Company, was to have been argued early in the present term, but was postponed; we shall obtain further particulars next week.

"J. W." (Albemarle-street).—In every case, as far as we have been able to ascertain, iron wire rope, of good construction, is found, after years of constant wear, to be far more durable, and in every respect better adapted for colliery and mining purposes, than hemp rope. Its much smaller bulk and weight to obtain equal power is about 1 to 2; for example a specimen of wire rope, 35 inches in circumference, and weighing 9 lbs. per fathom, is equal in strength to a hemp rope 8 inches in circumference, and weighing 16 lbs. per fathom; and as the surfaces are of so much harder a material, and running over a rolling surface, they last for years without sensible wear. Accidents from the breakage of wire ropes have been very rare, when compared with hemp rope or chain.

"J. D." (Pelton).—We know of no Institution of Civil Engineers in Cornwall. The Royal Geological Society of Cornwall, the Polytechnic Institution, the Royal Institution, and the Cornwall Natural-History Society, are, we believe, the only scientific institutions in the county, with the exception of local literary and scientific societies.

We regret being compelled to postpone, until our next, several communications which we have received from our respected correspondent, Dr. Murray, comprising "The Diamond," "Peat Charcoal," "Glass Ventilators," "The Aeroid Barometer," and "Mr. Alfred Smee's Speculations."

* * It is particularly requested that all communications may be addressed—

TO THE EDITOR,
Mining Journal Office,
26, FLEET-STREET, LONDON.

And Post-office orders made payable to Wm. Salmon Mansell, as acting for the proprietors

THE MINING JOURNAL
Railway and Commercial Gazette.

LONDON, DECEMBER 1, 1849.

The *Mining Journal* is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all news agents, at the Royal Exchange, and other parts of London.

On the whole, the week just ended has run out much in the manner of several of its predecessors, with a fair trade and steady, or in some cases improving, prices in all mining produce. This, as we have said a hundred times before, is better than that feverish and fluctuating state of the market, in which no man knew very well what was his own, or what turn things were likely to take next; and we may say, we believe, in behalf of the mining interests of the kingdom generally, that this settled and progressive course of business it is of all things desirable to confirm and to perpetuate. The importation, a few days since, of a thousand or two pigs of Chinese iron from Hong Kong, is a small novelty in the colonial entries of the week. As a first and, in its kind, as a maiden importation from that part of the world, it may be regarded as a novelty; but considering the extraordinary length of waters it has travelled, and the reported ordinary quality of the article itself, it is an arrival which will soon be interesting to the consignees only. The accounts from Cornwall, and from the west of England generally, are encouraging and satisfactory; the market for shares and produce continuing vivacious; and the working population of the mining districts being in general in full employment. Indeed, the prosperity of the country at large, as indicated by that very delicate but very intelligible barometer, the price of Public Securities, and especially of the Consolidated Three per Cent., has rarely been more firm and settled than at this moment. This latter branch of the Public Funds, or rather this central trunk, from which other securities derive their sap and strength, is varying from 95 to 96 per cent.—a price which has not been exceeded, we believe, for several years; and a co-ordinate event in the monied world is, that the Bank has begun to discount good paper at 2 per cent. This fullness of an element, to all commerce, to all industry, so essential, will, as of necessity, overflow and refresh the trading and the mining circles of the kingdom, in whatever direction, or to whatever amount, it can be profitably communicated.

All those who feel an interest in the welfare of the mining community will rejoice with us in the knowledge of the fact, that the prospects of the tin miner show symptoms of recovering from the depression which, for some months past, they have been labouring under, from causes independent of the actual demand for tin, and the ordinary operations of trade.

The late position of the market shows how completely the unlucky tin miner is subject to the caprice of the monopolists who strive to control the supply and price of the article, and how heavily he suffers by the want of a free and open trade for his hard-earned produce. With a view to secure the large quantity of Dutch tin offered for sale in August last, these gentlemen monopolists "beared" the price of British tin 10L or 11L per ton, although the demand for the article was good during the whole time; and these same gentlemen have kept down the price ever since, cruelly to the injury of the Cornish miner, in the vain hope of reducing the value of the quantity of Dutch tin still held by the spirited and more far-seeing

merchants who effected the bold purchase at Amsterdam. In spite of their exertions, however, the demand for British tin is so good, as to leave no doubt that the price must improve.

The price of Banca tin in Holland is advancing, and the Dutch merchants will, doubtless, make a handsome profit by their transaction. A far larger profit might have been made by the Cornish would-be monopolists, if they had exercised a proper spirit for an operation of such magnitude. As it is, they have not effected their object, and they have inflicted a serious injury upon the Cornish miners and mining population. The loss to the former may be reckoned at 10L per ton on 3500 or 4000 tons of their tin, amounting to 35,000L or 40,000L, solely owing to the miserably dependent position in which they are placed with regard to the disposal of their produce.

The present monopoly is worked completely to the disadvantage of the miner, who, by its capricious proceedings, is deprived of a fair remuneration for his capital and labour; and his only hope is from a rise in price, in spite of such proceedings, or a break up of the system, so that he may sell tin in the metal, and not in the ore.

Very few, if any, of our tin mines are so productive as to be able to withstand a long and severe depression in the price of their produce. Even with the best prices that have been obtained within the last 12 months, all the skill of the miner, and the best appliances he can bring to bear upon the dressing and preparation of the ore, have been and are required to make "both ends meet;" and when we consider the large number of labouring persons dependent upon the continued prosecution of the great tin mines of Cornwall, we may naturally be expected to express some anxiety upon the subject, as well as satisfaction at the improved prospect we have alluded to.

We are glad to find that our notice of the proposed testimonial to Mr. SHARP, in the *Mining Journal* of last week, was not an isolated reference to the question. Our contemporaries of Cornwall and Devon, who being in localities more directly interested in the matter, were, perhaps, quite as competent to form a correct judgment as ourselves, have, we perceive, taken corresponding views of the active and important services of that gentleman to the mining interests of the country. We, therefore, extract with pleasure the articles on that subject which have appeared since our last publication in the *Royal Cornwall Gazette*, *Woolner's Exeter Gazette*, and the *West of England Conservative*, which seem to unite in the opinion we expressed of the propriety of all interested in any degree in mining properties, marking their sense of the labours of their principal champion by adding their names to the testimonial, sanctioned, in the outset, by the subscriptions of some of the most eminent persons in Cornwall, fully competent to form an accurate estimate of the nature and extent of Mr. SHARP's services.

In a communication, in the *Mining Journal* of Saturday last signed ***, an unaccountable error crept in, which rendered the sense directly opposed to the intention of the writer, and which, in fact, made the reading unintelligible. The name of BICKFORD and Co. occurs twice, in both which cases, in the manuscript, it was "Messrs. B. and Co." intended, we are since informed, for BRUNTON and Co. We should think, however, most readers who have considered the correspondence would have discovered the error, and applied the correction.

Having thus cleared our consciences of this accidental *fau pas*, we feel called upon to say a few words on the subject matter upon which it arose—to the working miner, a most important one. That on the good qualities of safety-fuse for the use of blasting the safety of many human lives, and the comforts and support of a large mass of the mining population depends, no one, we think, will deny. Messrs. BICKFORD and Co., whose patent has expired, have never, we believe, been suspected of sending out an inferior article, but one in which every confidence has always been placed, its results in practice ever having been most successful. It is, however, stated, and, we suppose, on good authority, that, since the expiration of the patent, there has been an increase in accidents from premature blasts, resulting in death, of 7 per cent.; it would, therefore, appear that improper materials have been supplied; and we have heard it stated that the miners are, in some instances, compelled to use it, from the manufacturers being interested in certain mines as adventurers. If there is any truth in such statement, we must say, it reflects much discredit on the management; life and death hang upon the issue; the tributary has the cost of his fuse deducted from the hard-earned remuneration for his toil, and at all events he should be allowed the choice of an article, on the good or bad results of which his limbs, or even life, depend.

We are in no position to arbitrate between manufacturers of safety-fuse, or recommend this or that party's manufacture, having no practical means of doing so with justice, or propriety; and, we think, as it appears there will probably shortly be other competitors in the field, it ought to be an imperative practice to place fuse of different kinds and prices in the material house, ticketed with the manufacturer's name and the price. A dangerous article is dear at any price, and the Cornish miner will not pay 6d. for an article, if he can get as good a one for two-thirds the amount.

We observe that Mr. G. COPELAND, of Pendennis, has recently registered a cartridge for blasting, said to be of great power and certainty, and which, under all circumstances, guarantees perfect safety to the parties using it, whether in tamping, or re-boring, after a misfire. The inventors object has been to supersede the system of charging holes with loose powder, and produce a cartridge which will be equally economical. From the peculiar action of Mr. COPELAND's cartridge, the base is first acted on with great force, and in the rebound of the explosion, the sides are split and thrown, without the liability of stones being cast to a distance, which is very often attended with damage and danger. Many trials have been made in the county with the cartridge, both in wet and dry situations, with perfect success. In a quarry at Carnes, near Penryn, a single cartridge of 6 lbs. removed a block of granite 2462 tons, much to the astonishment of the quarrymen, who would have used seven times the weight of powder. It is said that, in all the experiments yet made, there has not been a single failure; and if the statements are really correct, it must prove a most important invention to the miner.

It has ever been our object to direct attention to mineral districts, whether at home or abroad, which hold out advantages to the employment of capital; at the same time, that we have ever advocated the outlay in our own climes to those of Mexico, Brazil, &c. True it is that the ores produced therefrom are of greater value; but equally true is it that their abstraction is attended with a greater cost. If we take the foreign mining companies generally, we shall find that many millions have been expended without a return; while the solitary instances of one or two are but a feather in the scale—hence our advocacy at all times to embark money in mines at home, give employment to our home miners, and encourage national industry. As relates to our home mines, it is hardly necessary to observe to the majority of our readers, that they are situate in districts where the mineral beneath the surface, and not the soil, gives the means of existence to those who are located thereon; while it is but in isolated cases that fertility at surface affords produce in depth. In thus treating on mining adventure at home or abroad, although advocates for the application of capital at home, we are not regardless of our colonies, which, next to this island with its sea girths, we acknowledge ourselves as far to be Protectionists, as to wish that we could secure the whole. Such, however, is not in accordance with the advance of the times; and we readily accord to other nations those advantages attendant on the discovery and working of metals, which we have a right to expect to be returned on their part by the introduction of our manufactures.

In thus remarking on the application of capital away from home, we are

induced to direct attention to a project, which has for its object the working of mineral lodes in Michapacan Island, on Lake Superior, Western Canada; and, judging from the specimens submitted to us, we have no hesitation in pronouncing the mine to be one of first promise; while the assays made by Mr. P. N. Johnson, F.R.S., fully bear out the representations made. An assay made by Dr. CHILTON, of New York, yielded 53 per cent. of copper, and 1800 ozs. of silver to the ton of ore. Two other assays, by Mr. JOHNSON, gave highly satisfactory returns, but not so rich in produce, the yield of the one being only 24 per cent. of copper, and 860 ozs. of fine silver to the ton of ore; and the other 90 per cent. of copper, with 641 ozs. of silver. We can very well imagine that the assay was made from "prills," but having seen specimens from the lode, intermixed with the spar, or country, there can be no difficulty in determining that the lode is regular, and not merely a deposit.

We have been disposed to advert to this adventure, from the desire which is daily evinced of embarking capital in mining enterprise; while we leave to those who may be so disposed, to inquire, and satisfy themselves as to the merits of the speculation, or the prospects it holds out for return. Sufficient is it for us that, having been furnished with notes and the specimen being placed before us, we think it well to recommend a colonial mine, or property, before any of those splendid and aerial prospects put forth by foreign adventurers.

It is not our object to advance one scheme over another, but simply to direct attention to those which have claim in the way of novelty. Such is the present; and having been taken up by parties in the City of the first position, as also by Canadians and Americans, we doubt not but that it will be carried out to the satisfaction of those interested, and, as we trust, the benefit of those who may embark in the enterprise.

We this day report, at somewhat greater length than is due to the position of the ASTURIAN MINING COMPANY, the proceedings of its meeting on Tuesday last, because there are so many mining and commercial speculations in the same sad predicament, that we desire to place prominently on record every case like the present which may be justly referred to as a precedent of judicious conduct in difficulty. That the result has taken us quite by surprise we frankly confess. The shareholders had been harassed by incessant calls, which manifestly, beyond all denial, had been improvidently applied. Deluded from year to year with fallacious promises, which changed the prospect of some return for their money into a byword and a jest, and outraged by the pertinacity with which an incompetent administration clung to office, and extorted support, it was with a desperate satisfaction the proprietary at large received from the lips of the directors themselves the welcome tidings that the power of persecution—their authority to make calls—had been wrenched from their hands by the potent spell of the Royal decree. Even the prospect of ruin failed to elicit a spark of sympathy on the part of a constituency before which the force of pledges was nullified by the reckless and faithless abuse of them. How, then, could we have anticipated that this same constituency, on hearing it proclaimed that the protection on which they relied was mere "delusion," would be moved by any arguments, however convincing to the ear, to a cordial, we had almost said enthusiastic, approbation of a further exactation? Not to us alone, but to the shareholders themselves, and most of all, perhaps, to the Committee of Liquidation, if the truth were told, must this change of feeling have appeared all but impossible. Great credit is, therefore, due to all concerned in this revolution—to the committee for the energetic moderation of their proceedings, and to the proprietors for their forbearance and faith.

The board have had evidently much to contend with. By dissensions within, and by opposition from without, the counsels of two opposing parties, involuntary allies, could hardly fail to be distracted. The Committee of Investigation, on the one hand, were bent on exposing the assumed delinquencies of the directors; and these latter, in self-defence, combined to frustrate their accusers; and it seems to be by one accord acknowledged that the conciliation of these conflicting dispositions is attributable to the chairman of that committee. When first we had to notice the position of the inquest, of which this gentleman was the organ, we felt disposed to blame the egotism and abruptness of its policy.

But we are now glad to have the opportunity to state that the necessity for disapprobation no longer exists, for the tone and temper of the agent progressively improves as affairs advance to their crisis. The statements made to the meeting distinctly pointed to the only apparent means which the shareholders have to secure themselves from litigation and total loss; the answers to the several questions put were prompt, and, as far as the circumstances admitted, satisfactory; and, on the whole, we consider the shareholders fully justified in their unanimous expression of restored confidence.

If we dwell thus upon the progress of these transactions, it is to mark more clearly their moral. The committee of investigation have succeeded in applying the remedy, applicable to all such cases—reconciliation and reform. Their ostensible duty is properly made subservient and secondary to the main interest of the company, and is placed in abeyance. Reconciliation first, then arbitration, constitutes the panacea which our physician prescribes for all the maladies of his patient. With change of air and regimen he sets him on his legs, before he attempts to correct the habits which have occasioned the disease. We do not assert that inquiry should in every case sink into compromise, or that it should be postponed to other measures. But in cases as peculiarly situated as the company in question, it would be an evidently absurd to defer the compromise proposed, as would be a discussion about the causes of disaster on the part of the crew of a foundering ship, at the time they ought to seek for the means of salvation.

Above all, there should be no disunion. We trust that every one in a like condition will feel and acknowledge the imperious necessity of combined action, as incalculable by the simple but trite fable of the "bundle of sticks." The dissentient shareholders, referred to in the report, will find it their interest to fall in with the rest; and opposition must dwindle into the most contemptible insignificance. For the benefit of several parties whom we know to be thus circumstanced, we have attempted to show the policy of union, in pointing to the pre-eminent success of the parties in the present instance, who, by repelling all incentives to discord, have half retrieved their lost ground; for they must assuredly achieve thereby the fulfilment of their hopes. Already, as it is announced, the Spanish Government has struck down their enemies; whilst public attention is even now directed to their affairs as a matter of more than private interest. What every one says must be true. But all concur in saying that the property of the Asturian Company is valuable and secure; and if this be true, it is more than probable that the pent-up bounty of capitalists will in good time be opened to support this as well as other objects of legitimate investment.

IMPROVEMENT OF THE LONDON SEWAGE.—Among the numerous plans for improving the sewage of London, and at the same time preserving the Thames from pollution, which were sent in to the Commissioners of Sewers a few weeks since, is an ingenious one from Baron Von Rathen, for raising the manure into elevated tanks by the force of compressed air. He proposes to form a certain number of central, or main sewers, along certain principal thoroughfares, to lifting stations in the various suburbs. The sewage water is here admitted into a sump of large dimensions, connected with which is the lifting apparatus; it consists of two air-tight iron tanks, beside the sump, having each a valve or lock, which, opening and shutting, admit the sewage liquid alternately into each. Through the top of each tank a pipe descends nearly to the bottom, the other end of which is carried over the heads of cisterns placed at any necessary elevation, and bent down through an opening in their tops. From a compressed air reservoir connecting pipes are carried to the air-tight chamber, the valves of which also work alternately, but in contrary directions to those opening into the sump; the consequence is, that as soon as a sufficient quantity has flowed into one air-tight tank, and its valve closed, the compressed air valve immediately opens, and the liquid is forced up through the pipe before mentioned, and flows into the cisterns, from whence it descends one pipe to conduct it away to manure any district, and another for filling close tanks on wheels, to be carried where it might be required. Of course the most economical way at present known of compressing air for such a purpose would be by steam power, but the baron states that he has a new power engine without fire, a description of which we should be happy to be favoured with.

MANUFACTURE OF PLASTIC MATERIALS.

[Abstract of specification of patent granted to Thomas Goodfellow, of Tunstall, in the same county, potter, for improvements in the method or methods of preparing plastic materials for manufacturing purposes.—Patent dated May 24, 1849.]

This invention has reference to two objects—firstly, the extraction of the moisture from various plastic materials in a more beneficial manner than is effected by any of the processes hitherto used; and, secondly, the temporary admixture of certain combustible substances with plastic materials, in order to the better extraction of moisture therefrom.

The first of these objects can be carried into effect by six different methods; but as these methods are worked out by means of rather complex apparatus, which cannot be properly explained without exhibiting the drawings annexed to the specification, we can only set forth the principal features of each method.

The first method consists in the use of an apparatus, consisting of an open trough, for the slip or plastic material, lined with sheet lead, sheet gutta percha, or other suitable substance, provided with a false bottom, composed of porous material, having cavities communicating with each other arranged beneath the false bottom, in connection with pipes and receivers, employed in conjunction with a common water pump, by means of which water is injected; upon the withdrawal of which, by the apparatus, a vacuum is created beneath the false bottom, so that the extraneous moisture will be forced out of the plastic material placed on the false bottom, by the pressure of the superincumbent atmosphere.

Another method consists in the use of an apparatus similar to the above, but arranged for the use of steam instead of water, in order to secure the required vacuum.

Another method consists in the use of a similar apparatus, but so arranged that the direct action of an air pump may be applied to secure the vacuum desired.

Another method relates to the use of apparatus similar to that used under the first method, excepting that a lifting pump is employed instead of the common pump.

Another method has relation to the use of a similar apparatus, excepting that instead of an open trough being employed, one with a moveable cover is used, for certain substances, such as sugar, &c., so that it is not the mere superincumbent pressure of the atmosphere that exerts extractive pressure upon the plastic material, but the superincumbent columnar pressure of the atmosphere.

The last method has relation to the use of similar apparatus, but having the bottom of the trough differently arranged, so as to create larger vacuum spaces. The second object, which relates to the temporary admixture of plastic materials with certain combustible substances, consists in combining powdered coke, powdered charcoal, or similar substances, with the plastic material, which is to be submitted to the above process, when the moisture is to be further extracted by heat.

Having described the nature of the invention, the patentee states that what he claims is the exclusive use to the methods above set forth, and to the process of combining the combustible and plastic material.

Patent-office and Designs Registry, 210, Strand, Nov. 28.

PROGRESS OF ELECTRO-MAGNETISM.—In another column will be found a communication from Mr. Henry Smith, of the Vulcan Iron-Works, West Bromwich, respecting a most interesting and probably, eventually, a most important application of galvanic magnetism to the regulation of the speed of trains, or its action as a sudden break. Mr. Hjorth's patent would have been before applied, but its success has been retarded by the peculiar construction of railway wheels. In Mr. Smith's improved wheels, the fibrous laminae of the iron radiate from the centre to the periphery, which has rendered the experiment completely successful. Another experiment is about being made on a full size—viz.: with wheels 3 ft. in diameter, and axle 4 ft. 8 in.—the results of which we shall give in a future Number. Mr. Hjorth is progressing with a large magnetic engine, at the Horseley Iron-Works, the proprietors of which have taken up the invention; and we hope shortly to hear of successful results.

METAL RAILWAY SLEEPERS.—We have on several occasions reverted to Reed's patent railway chairs, so well adapted for securing rails from springing at the ends, and thus endangering every train in its passage, besides causing such severe destruction to the permanent way; as also to a metal block chair, to supersede all wooden sleepers, and form the entire permanent way with iron, by which an enormous saving would be effected, avoiding the ruinous cost of frequent renewals of the permanent way—one of these chairs may be seen at our office. Mr. Reed has also communicated with us, in consequence of having noticed an article in the *Mining Journal* of Nov. 3d, in which it is stated that Mr. Barlow, engineer of the South-Eastern Railway, claims the invention of an entire metal railway, in which he claims the priority of the invention, having taken out a patent for a similar plan in 1846. He says—"The construction of a railway entirely of metal, for founding the rails upon, was then suggested and claimed by myself. The cast metal block and sleeper chairs have been in use for the last two years on a neighbouring public railway, with a prospect of answering most fully all that I expected, and there being no failure in either of them, no question whatever can arise as to their efficiency and great durability. Independent of the proposed longitudinal platform and chair, my belief is that the metal block chair itself will fully carry out the expectations of the eminent engineer, who I have taken the liberty to refer to in this communication. These chairs may be seen at your office by any gentleman who may consider it worth the trouble to inspect them. The weight of the block chair deposited at that place is greater than is necessary for durability, but the casting as it is, according to the present price of metal, will not much exceed (if it does so at all) the present expense of chairs and wooden sleepers now in use. It may be remarked, that the platform, or sleepers, which constitute the great portion as regards weight, may at once be run from the blast furnace, and would lessen very materially the cost, when taken into the estimate; and in all probability reduce the comparative expense to a very trifling amount."

NOTHING NEW UNDER THE SUN.—A curious old document has come into our hands, through the kindness of a correspondent, relative to the manufacture of iron with peat. This document bears no date, but, as its author states, his patent was granted by his late Majesty, and, as its possessor informs us, it has lain among a mass of his grandfather's papers about 80 years, we may safely estimate its date in George the Second's time, or nearly a century. It is a proposal of Mr. Wm. Fallowfield—for making iron with peat coal, at ten pounds per ton, in pursuance of a patent granted to him by his late Majesty. Mr. Fallowfield commences, by noticing the notorious abuses of the public confidence, and loss to numerous persons and families, by a Mr. Wood's project for making iron with pit coal; he then says that this peat fuel is produced in great plenty in almost all countries where iron stone is found, as if Nature had purposely prepared for its use. The heat is evidently more intense, since it will make a bloom half an hour sooner than charcoal will, and makes iron and steel from the ore, through all its gradations, in greater perfection and in less time than wood charcoal. He then invites all parties interested to visit his furnaces at Leek, in Staffordshire, see the whole process, calculate the costs of every operation, and convince themselves that he is perfectly correct in stating that he can make iron at 10*l.* per ton. He then offers terms to capitalists to join him in promoting the patent in various parts of the kingdom. We know not how far Mr. Fallowfield succeeded, but his process, as well as Mr. Wood's, was evidently dropped by the iron manufacturers; and it is a singular coincidence, that smelting by coal, in which Mr. Wood failed, has been successfully revived within the past half century, and Mr. Fallowfield's peat process, under Mr. Rogers's conversion of peat system, is looked up to as a panacea for Ireland, in the promotion of her industry, by supplying the iron works of the United Kingdom with peat charcoal.

NAIL MACHINES.—Mr. O. J. Richards, of New York, has patented an improvement in cylindrical wrought nail machines, which is thus described:—"The nature of my invention consists in constructing a machine to make nails from rods by means of cylinders, four being used; two of which are composed of a disk, with cams attached to springs, and the centre or disk, while there are two others which are for closing the cams; these cams with the springs connected, call spring hammers. The two cylinders of spring hammers form the nails on their peripheries, and sides or flanches; these being so shaped as to give shape to the nails. The form of the nail to be produced is formed upon the periphery and flanch of the cylinders—the is, the form of the head is indented into, and the points raised up on the surface of these cylinders of spring hammers; so that by passing the rods through between the cylinders (the rods being at a welding heat,) the rod will be converted into nails."

The Metallurgical Treatment of Ores.

By JOHN MITCHELL, Esq., F.G.S.; author of *A Manual of Practical Assaying, &c. &c.*

No. XXXVI.—[Continued from November 17.]

Refining by Charcoal.—This operation is carried on in a small quadrangular furnace, formed of plates of iron covered with clay; its depth is about 10 inches and width from 24 to 28 inches. The blast is furnished by a tuyère, which passes about 4 inches into the furnace, and dips so that its aperture is opposite to the lower angle of the furnace. Before the furnace is a plate of iron, fixed at the height of the upper opening, and slightly inclined. A hole is pierced at the lower part of the furnace, for the purpose of affording a passage for the slag formed during the operation. The whole furnace is covered with a hood, furnished with a chimney, to carry off the gaseous products of combustion.

The furnace must be supposed to contain the lighted fuel of a previous operation; it is then filled with fresh charcoal, and the blast admitted. The iron to be submitted to the operation is sometimes in the form of very large pigs, many feet long; at other times in smaller pieces, or even cast plates. In the first case, the pig is placed on rollers, and one end thrust some 6 or 7 inches into the furnace, and in the midst of the fuel. In the second case, the metal sufficient for one operation is placed immediately above the fuel. The charge varies from 200 to 300 lbs. In time the metal undergoes fusion, and passes through the blast from the tuyère. The period of fusion extends over 3 to 8 hours. The workmen profit by the high temperature developed by the combustion of the charcoal above the metal, to forge the bars of refined iron of the previous operation. The drops of iron passing through the blast of the tuyère oxidise superficially, forming a very basic silicate of iron, which reacts on the carbon of the cast-iron. When this has collected at the bottom of the crucible it has lost a considerable portion of its carbon, and becomes much less fusible. From time to time the slag is run off, by opening the tap-hole; but a sufficiency to continue and assist the decarbonising action is allowed to remain. Occasionally the workman directs the blast completely on the surface of the metal, to increase the rapidity of oxidation. When the mass of iron partly refined has acquired a certain degree of consistency, it is raised and placed above the charcoal, which is pressed down into the furnace; the blast then passes immediately under the mass, and exercises a powerfully oxidising influence. Fresh charcoal is added, and the blast is increased, so as to fuse the metal. After the second fusion the refining is far advanced, and the iron forms spongy masses at the bottom of the crucible. The workman collects the scattered fragments, and welds them into one mass; sometimes, when meeting with a fragment less refined than the others, he exposes it for a short time to the full blast of the tuyère. When the refining has terminated, the cinder is fully run off, the mass of iron withdrawn, beaten on all its surfaces with the tools by which it was removed, and then submitted to the hammer; the hearth is then cleaned.

In the operation there is sometimes added a portion of the slag of a former refining, as well as the iron scales produced during the forging of the bar-iron. When the plate of iron forming the bottom of the hearth is too hot, it is cooled by the aid of a certain quantity of water, which is run underneath it by a properly arranged channel; it is then ready for another operation. After the mass of iron has been taken from the furnace it is placed on an anvil, and there receives repeated blows from a heavy hammer, it being turned from side to side and from end to end, so as to receive an equal amount of compression in every direction. The anvil is generally of cast-iron but the hammer is of malleable iron, faced with steel. The hammer head weighs from 800 to 1600 lbs., and is mounted on a wooden handle, encircled with iron bands; motion is imparted by water power. During the hammering the very fluid cinder interposed between the particles of spongy metal exudes, and the metallic particles weld. During this process the blows are so managed, that the mass of iron acquires the form of a long prism with square base; this is divided into five or six portions, each of which is re-heated and forged into the kind of bar-iron required. This method of refining gives from 72 to 76 per cent. of malleable iron from cast metal; the iron thus obtained is always of good quality, when the pig is not very impure. Very good malleable metal may even be obtained from pig of inferior quality, but then the loss is very considerable. Hot air has also been employed in this kind of refining; but it has generally been abandoned, on account of the irregularity of the work. It effected a considerable saving in the first fusion; but in the second portion of the operation it failed; there was not body enough to produce a sufficient oxidising effect. Coke has been used in this operation, with the view of replacing charcoal, but unsuccessfully; the refined metal was always of inferior quality.

Conversion of Cast-iron into Malleable by Means of Coal.—The refining iron by coal was invented by Cort about the year 1788. He used at first the metal as it came from the blast-furnace; but the results obtained were very uncertain, and left much to be desired. Afterwards the crude metal was fused with coke in the ordinary refining furnace (termed the finery or running out fire, and like that already described for refining by charcoal), run into plates, and the plates so obtained treated in reverberatory furnaces. This course of procedure was perfectly successful. The metal obtained from the finery furnace is called fine metal. The following is an outline of the operation, as conducted in the running-out fire:—Supposing an operation just completed, the hearth is cleaned and filled with coke, on which is placed from 1 ton to 1½ tons of pig-iron in lumps of from 40 to 50 lbs. (sometimes the unbroken pig is used); the metal is covered with coke heaped over it, and the blast is allowed to act, at first gently, and after a little time more strongly; in proportion as the coke burns away fresh is added. The chief care of the workman is to keep the temperature at such an elevation, that the metal becomes very liquid; hence great care must be paid to the amount of air admitted by the tuyères. When everything is in good order, and the operation is going on well, the coke eventually rises up every here and there. This kind of ebullition is partly caused by the blast, partly by the swelling of the metal undergoing during the disengagement of oxide of carbon. When the whole is fully fused, which happens in from two to two-and-a-half hours, the tap hole is opened, and the metal runs off, forming a plate of a thickness and size corresponding to the amount and quality of ore employed with the above proportions; it is usually from 9 to 10 feet long, 2 feet wide, and about 2 inches thick. Cold water is thrown on it, to cool it as suddenly as possible, in order to render it brittle. The iron thus treated bears the name of fine metal; it is very white, sometimes granular. It has a sparkling fracture, and is sometimes pitted, or porous, on the surface, and occasionally even the entire mass partakes of this character. During the passage of the metal through the heated coke a portion oxidises, forming a slag with the ash of the fuel, and with the silicic acid, produced by the oxidation of the silicon of the iron. This slag, which is very rich in iron, exerts a powerful decarbonising action on the iron, which remains in the metallic state. During this operation the iron loses nearly all its silicon, and but a portion of its carbon. Thus a metal having the following composition—Carbon, 80; silicon, 4.5; phosphorus, 0.2; iron, 92.8 = 100.0—gave fine metal, having the composition—Carbon, 1.7; silicon, 0.5; iron, 97.8 = 100.0; this sample was from Firmy. This operation also removes manganese, and portions of phosphorus and sulphur. This latter is one of its most important features, for it appears that these substances are better removed by a direct oxidation than by the secondary oxidation, effected in the reverberatory furnace by means of the cinder.

The second part of the refining is termed "puddling," and is executed in reverberatory furnaces, which are called puddling furnaces, and which differ slightly from other reverberatory furnaces by the form of the hearth. The chimney ought to be at least 40 feet high, in order to ensure the proper draught, as the heat required is most intense. The interior of the furnace is formed of refractory bricks, the exterior of ordinary bricks or of stone. The hearth, which is nearly horizontal, has but a very slight inclination, in order to facilitate the removal of the cinder; it is made of refractory bricks, or of plates of iron. A damper is attached to this furnace, in order to modify or intercept the passage of the flame during working, and the working door ought to have an easy upward and downward motion, and to fit accurately. The hearth is covered with a layer of very refractory sand, though not so refractory but it will slightly agglutinate under the influence of the intense temperature existing in the puddling furnace during the time it is in full action. In some works, a rounded slag is employed for lining the hearth; and there is considerable advantage in the use of this material, for as it is already saturated with oxide of iron, it absorbs no more, and does not easily determine its production. The loss is, therefore, less during the refining; but the quality of the iron is inferior to that produced on sand beds.

M. Villeneuve has tried lime as a lining for the furnace bed, and found that the time required for the operation was much less, but that the loss remained about the same. The employment of lime-lined beds had for its object the make of a superior quality of iron, by preserving it from the injurious effect of sulphur, the influence of which is always felt during puddling by coal.

It was also thought that the lime, being in large excess, would tend to separate the sulphur and phosphorus found in the cast metal, as well as furnished by the fuel, and so render the iron of better quality. It was also for this purpose that M. Dufaud made use of lime in puddling, adding it from time to time during the operation. The following are the results obtained by Villeneuve, and it is much to be desired that ironmasters would make some experiments in this direction, as I am well assured that a considerable improvement would result—an improvement that would more than compensate for the expense of the lime employed for the beds. The metal thus produced is much more tenacious than ordinary bar-iron—a property that must at once be evident it is desirable to impart to the metal in the greatest degree in the manufacture of nearly all malleable iron-work, as boiler-plate rails, rods for suspension bridges, cables, &c.

Bed formed of 5 vol. **Bed formed of 10 vol.** **Bed formed of 15 vol.**
of lime & vol. of sand. pure lime. of sand.
Weight of pig-iron 617 443 —
Weight of bar-iron 617 443 —
Loss per cent. 17.5 19.2 18.7
Consumption of coal 491 429 —
Time consumed in the operation 1 hr. 40 m. 1 hr. 50 m. 2 hr. 25 m.

There is one remarkable point in these experiments; it is that the loss has not been very considerably diminished, for the lime should, by its presence, prevent, in the most efficacious manner, the production of oxide of iron.

[To be continued in next week's Journal.]

ON THE LAW RELATING TO MINES.*

To capitalists and other parties, now so numerous, who are turning their attention, their inquiries, their gains, and their energies to mining pursuits, it is indispensable to their success that they should be acquainted with the laws by which such property is held and regulated. From time immemorial, in consequence of the peculiarity of the physical and mechanical operations necessary, and the great risk appertaining to mining, many privileges in law have been granted in metalliferous districts, particularly Cornwall and Devon. These peculiar laws and their operations have been, until within a comparatively few years, during which the mining interest has considerably increased, a sealed book to the community, excepting the initiated few; and even at the present day there are many interested to a large extent in mining affairs who are often puzzled on the most trivial details of our mining laws, without knowing where to seek the information, as numerous of our replies to correspondents sufficiently prove. We are happy to find that a treatise on this interesting subject has just appeared, which bids fair to dissipate the obscurity which has too long surrounded it. It is from the pen of R. P. Collier, Esq., barrister-at-law of the Inner Temple, who is Recorder of Penzance, may be supposed to have turned his forensic studies to the peculiar laws of the mining districts; and, from a perusal of the volume referred to, he appears to have well qualified himself for the task he undertook. The treatise is intended to contain a summary of those principles of law and equity which govern the acquisition and transfer of property in mines, and the duties, rights, and liabilities of mine owners and adventurers. The peculiar customs of Cornwall and Devonshire, with the Cost-book System, are treated in a clear and descriptive manner, with the relation between employers and employed, and the punishment of criminal offences against mining property. The work has been got up in size and price to be within the reach of even the working miner; and we doubt not but that it will be duly appreciated by lords and adventurers. We have already, in our last, given several important extracts, on the Law of Partnership, and the Cost-book System, and which it is our intention to continue, as opportunity offers.

* *A Treatise on the Law relating to Mines*, by R. P. Collier, Esq., of the Inner Temple, Barrister-at-Law; Recorder of Penzance. London: William Benning and Co.

RESOURCES OF THE BRITISH EMPIRE.*

We have received the first number of a series of monthly publications on the above important and prolific subject, from the pen of T. C. Banfield, Esq., to whom our columns have been indebted for much interesting statistical matter, particularly a series of papers in the present year on the industrial interests of the country, the importance of the Hungarian markets to British commerce, &c. The object of the author appears to be to present, in a condensed form, all that is essential in the mass of information now scattered through a multitude of publications, such as Parliamentary reports and returns, the public press, reports of public companies, and other authentic sources. To arrange such information in simple and perspicuous order, and with scrupulous correctness, we certainly know of no one more capable of the task than Mr. Banfield; and the contents of this, the first number, give sufficient guarantee as to the important statistical information to be conveyed in the succeeding ones. Commencing with the colonies—North American, Australian, African, East and West Indian—he shows that the British colonial empire has, of late years, rapidly increased in extent and importance—not so much from actual additions in territory since the peace, but from the fact of these vast countries, situated in every portion of the globe, having been more fully peopled, their Governments better organised, and the general interests, both of native and settler, more cared for than had been the case previously. We, then, have a list of the entire British colonial possessions—their date of capture, cession, or settlement, nature of legislative Government, with the population in 1847, the latter of which gives a general total of 6,348,924 individuals. In calling attention to the United States as a point of comparison with our own colonies, and as illustrating a principle which cannot be placed too prominently before the English public, he says—

The American citizen has hitherto enjoyed an almost unrestricted right of appeal to the waste lands of the Union. Owing to the enjoyment of this right, the United States has had the highest rate of wages to show that is known in any country. Panzerism is in the United States almost unknown; many repressive expedients in Government are there found to be unnecessary, which elsewhere are resorted to, in order to curb the violence of slaves that find no field for their gratification. The back woods and prairies of American federation were so vast, and appeared so little tempting for colonists, that they were abandoned to adventurers by the public state while in its infancy. Whoever felt restraint under the forms of social or industrial refinements could emigrate to the west, and take up his abode on the unoccupied land. Insensibly the scattered log-houses gathered into hamlets and villages, whence a traffic was opened with the nearest towns. The furs, the potash, and at length the tallow, or the grain, of the far west formed a regular supply on which the trade of many shipping ports depended. Roads after a while connected those distant places with the great marts of trade, and the restless emigrant found himself at no distant period once more within the pale of civilised society. But it was as an independent and rich member of the small city he had left.

He then shows that this power to regenerate the labour market, when overstocked, is also placed at the command of Britain by the vast tracts in her colonies in every quarter of the globe, not only to support an immense population, but, properly managed, capable of vastly augmenting the wealth, and arousing the intelligence of the whole British nation. From Mr. Dawson's survey of our colonial empire, quoted by the author, it appears that the entire extent of possession amounts to 5,848,376 square miles, and of which the surface settled, or the area which is recognised as subject to the jurisdiction of some tribunal, or governor, is 2,189,105 square miles—the whole presenting a field for industry ten times the area of England, Ireland, and Scotland together, and the population above 6,250,000, there is, consequently, in the colonies 40 acres for each inhabitant, for one acre to the population at home.

On the subject of emigration we have some interesting statistical tables, showing the enormous increase which has taken place since 1825, it being in that year 14,891, and in 1848 these numbers had increased to 248,099, making a total in the 23 years of 1,985,586 persons. From an analysis of the colonial budgets, we find that from the British settlements in New Holland, in 1847, population 314,700, there was exported produce to the value of 2,845,805, or 97. per head. From the American colonies, population 1,993,120, 5,973,463, or 37. per head; and from the West Indies, population 1,137,689, 7,278,851, or 71. per head. These returns are independent of British India, with a population of 200,000,000, and Ceylon 1,555,633. Taken as a whole, this first number is highly interesting and important, and we have no doubt that entire, which, it appears, is intended to extend to five numbers, will form a standard statistical work of reference. No. 2 will be on British India—3. United Kingdom—4. Trade, Currency, Taxation, Debt, and Credit—and 5. The Sciences, Fine Arts, and Production of Wealth.

* *The Economy of the British Empire, containing a Condensed Tabular Survey, with appropriate discussion, on the Territories, Population, Resources, and Government, of the British Empire and its Dependencies*, by T. C. Banfield, Esq., author of "Six Lectures on the Organisation of Labour," delivered in the University of Cambridge, "Industry of the Rhine," &c., &c. London: David Bogue, Fleet-street.

MINING IN BELGIUM.—The accounts from Liège, Verviers, Seraing, &c., are highly satisfactory; and large quantities of British cast-iron are expected to be imported during the ensuing year for the improvement of their own *matériels*. The foundries are nearly all in blast; while in the colliery districts generally great activity prevails.

THE SALT TRADE WITH BELGIUM.—Now that the amended Navigation Law is on the eve of operation, it becomes necessary to look about us as to the countries from which some equivalent may be expected for the concessions we are making to the great cause of unfettered intercourse between nations. Belgium is one of those countries. It appears that, as the law now stands, the article of salt (of which some 30,000 tons is obtained from England, and 7000 or 8000 tons from Portugal and Spain annually) can only be imported into Belgium by vessels of its own flag—the Belgian shipowners thus enjoying a perfect monopoly of the carriage of the only article which employs a large extent of tonnage. And this is not all; for such a monopoly of the import necessarily secures almost a monopoly of the export trade, because, as English vessels must go in ballast in Belgian ports if they go at all, it seldom or never answers the purpose of our shipowners to send their vessels as competitors with the Belgians in their export trade. Here, then, is a case for the interference, and immediate interference, of our Government. When

Original Correspondence.

MANUFACTURE OF IRON.

SIR.—In explanation to Mr. Musket, I may state, that I think the errors alluded to are more the result of a slight misinterpretation on his part than of actual misstatement on mine. In speaking of the denser, and, therefore, more difficultly combustible fuels being easier of oxidisation by means of heated air, I merely stated a fact, explaining it, at the same time, by adding that carbon burnt more readily in proportion to the temperature to which it was heated; and this is strictly true in relation to all those substances capable of oxidisation—for instance, iron, zinc, copper, &c., oxidise very slowly at the ordinary temperature, whilst, at a red heat, oxidation takes place with a considerably increased rapidity; this is also true of carbon. Mr. Musket is in error if he conceives I meant that the lighter kinds of fuel could not be used with the hot-blast, or were less appropriate. I was well aware that they were employed, inclusive of, as Mr. Musket mentions, raw coal; so that, when I state "denser fuels may be employed, which would burn but imperfectly by the cold-blast," I mean they would burn less rapidly, as might have been inferred from the previous portion of the passage.

I fear I hardly understand the term "destructive combustion," used by Mr. Musket, unless he means fuel burnt to waste. This, I conceive, can scarcely happen, unless the study of the nature of the fuel, the degree of compression and temperature of the blast, together with the physical constitution of the ore, be grossly neglected. For it appears to me that, unless the charges descend so rapidly as to prevent the necessary change by deoxidation to be perfectly accomplished, all the fuel burnt in the hearth and its neighbourhood is effective. Of course it must be granted that much fuel will be wasted if due attention be not paid to its nature, whether dense or light, as also the quantities employed in relation to the amount of ore, as well as the amount and density of the air admitted. For instance, if the fuel be a readily combustible or light fuel, and the amount of ore, limestone, and air, both in quantity and pressure, be duly apportioned, the furnace will work well; but supposing the amount of air to remain the same, but its pressure diminished, then the furnace will commence to work badly; the charges will descend too rapidly, because all the oxygen of the admitted air will be consumed near the tuyère; consequently, the upper strata of coal will get but little, the lower strata being consumed, causing the upper materials to fall so rapidly that the ore has not time to undergo a perfect deoxidation by the liberated carbonic oxide (as already explained); the oxidised portion unites with silica and lime to form a very dark coloured cinder, containing much iron, whilst the quality of the latter rapidly deteriorates not having had time to take up carbonaceous matter from the fuel in the boshes, as described in a former paper. All this is remedied by restoring the proper amount of compression to the blast. This is a case of wasteful expenditure of fuel, analogous, I presume, to Mr. Musket's "destructive combustion."

As regards the heat in the upper part of a hot-air furnace, I merely meant the passage as it reads. I said—"Supposing the temperature of the hearth to be the same in both cases, there would be, in the middle and upper part of the furnace, less heat than in a furnace fed with cold air;" and, as I have just before mentioned that the amount of gas passing through a hot-blast furnace is less than in a cold, in proportion to the weight of ore, &c., in the furnace, I can scarcely see how it could have been misunderstood. As to the other passage, it is true that, by the aid of the hot-blast, "iron may be as easy to make as bricks;" but it must be borne in mind that there is more than one quality of brick, as well as of iron; and it was to this point which I specially referred. Mr. Musket says, "there is a variability in the qualities of hot-blast iron from different localities more marked than with cold-blast; but this is a different point, and not what Mr. Mitchell means." Now it is, in fact, the very meaning to be attached to my observation, as will be readily seen; it stands thus—"The management of a hot-blast is more difficult than that of a cold-blast furnace, and the yield appears to be more variable in quality." Furthermore, it may be noticed, I have nowhere inferred that iron in quantity could not be obtained by the use of the hot-blast; I merely referred, by the way of contradistinction to the amount of management and attention required in obtaining iron of the same quality as that obtained by the cold-blast—point I think which has not been arrived at, at least where the mine is not pure, meaning when it is not free from sulphur and phosphorus compounds; for the high temperature to which the metal is exposed is favourable to the extended production of phosphorised compounds of iron, and the smaller amount of limestone required is favourable, as before explained, to the assumption of sulphur.

My remarks as to the material of the boshes is borne out by Mr. Musket himself. He states that, at the lower part, the boshes do wear, and it is necessary they should, in order to give the proper form to the furnace to put it in the best working order; but surely it would be better to give it the proper working form at first, and make that part liable to wear of the most refractory materials, so that, once having the proper form, it might keep it as long as possible. I perfectly agree with Mr. Musket, that very much remains to be done in the way of analytical research; but the iron-masters themselves appear to give very little encouragement to any one in the prosecution of experiments of such national importance. The time possibly may arrive, when the amount of chemical knowledge every day accumulating on this subject on the continent may make foreign manufacturers more serious opponents than they are at present given the credit for. This should, doubtless, be looked to before it is too late.

Whilst on the subject of the manufacture of iron, I may, perhaps, be allowed space to make a few remarks on Mr. Leighton's last communications. Mr. Leighton stated, some four weeks since, that the conceives "cinder" to contain carbon, and that it was frequently mistaken for silica, and that cinder generally was a compound of iron, oxygen, and carbon, in varying proportions. Now nothing can be further from the truth than this. Cinder is generally a compound of oxide of iron with silica. That silica should be mistaken for carbon, and vice versa, is an impossibility in analysis, the character of the two substances being so distinctly marked. That peroxide of iron and a carbonaceous body, suddenly heated together, do form cinder when in contact with siliceous matter is certain; but that is only owing to the partial reduction of the peroxide to a state of protoxide, which then forms a very fusible silicate. When slowly heated and kept from fusion, metallic iron is also the result, that depends on the total reduction of the iron, before the matter from which it has been the product have had an opportunity to fuse. As regards the presence of cinder in bar-iron, I do not think it at all probable, from the analysis of many samples. It is, however, a very easy matter to prove, and I will take the earliest opportunity of making the experiment, which is simply as follows:—A perfectly clean piece of iron is to be reduced to a fine state of division by the fire, placed in a glass or porcelain tube, and heated to redness; when in this state perfectly dry hydrogen gas is to be passed over it for a short time. If the metal contains any cinder, that, being principally composed of iron and oxygen will be decomposed, and its oxygen appropriated by the hydrogen to form water, which can be collected in a tube, containing dry chloride of calcium, which will absorb it. By taking the weight of the tube before and after the experiment, the production of water, and consequently the presence of cinder, can be ascertained by the increase of weight the tube has acquired. It is, however, a subject which demands attention.—JOHN MITCHELL: Hawley-road, Kentish-town, Nov. 28.

MANUFACTURE OF IRON.

SIR.—I do not see how anything but good feeling should enter into the discussion of Mr. Leighton's theory. But it would be convenient were he to state more distinctly whether he considers this compound of "cinder" an advantage or disadvantage to the quality of iron, for his arguments seem rather to alternate on either side. I have understood him to assert, and it is that which I have opposed, that this "cinder" is an essential constituent of good bar iron, imparting to it its welding and workable qualities. Thus he asserts the refining is resorted to in order to furnish the iron with the proper quantity of this compound. How comes it, then, that tin iron, the example he adduces for the opposite parity, is always also refined, before subjecting it to the hollow fire, and, on the other hand, a great quantity of bar iron, and some of it the best in the trade, is made from the puddling furnace at once, without using the refinery at all? And to complete the fallacy of his instances, a great deal of tin iron is now made from the puddling furnace, to the entire exclusion of the hollow fire. Surely Mr. Leighton does not mean to lay any stress on the case he gives of the opinion of the blacksmith. It is a known property of iron, so general that the exceptions need hardly be noted, that in proportion to its toughness when cold, so is its redshortness. Tin-makers, therefore, select for their purpose such marks of pig iron as are known to possess these qualities. Of course, such iron sent to a smith, for ordinary work, would

give him much trouble, but how is that a proof that the absence of the "cinder" is the cause of this redshortness? On the contrary, the iron of the same minerals, worked into bars by the ordinary "cinder-making" process, will continue to retain this redshort quality, if not corrected by some extra means.

Mr. Leighton asserts it to be the opinion of some, that the improvement of bar iron by piling and re-rolling proceeds from getting rid of impurities, and that he dissent from this opinion. I agree with him in this dissent. Probably, a very small proportion of cinder can be expelled, after the iron has been first solidified into the form of a puddled bloom. The cinder which is not faced out then, will hardly be so afterwards. There are some sorts of piles where the escape of cinder from the substance of the iron, except at the ends, is absolutely cut off; for instance, where small pieces of iron are piled on the cuttings of T rails, in the hollow of the bridge, yet such piles make excellent small sizes. In fact, inasmuch as the more frequently iron is piled, the greater are the number of surfaces contained in the bar which have been exposed to oxidising influence in re-heating, it may happen that there is a larger proportion of cinder in a finished bar than in a puddled bloom. I do not say that it is so, but, for the sake of argument, admit it; it still will not help Mr. Leighton's theory one jot forward. He will say I, too, am dealing in paradoxes; but it is not so. The frequent rolling is a purely mechanical process, producing fibre. The principle is that which acts in Dr. Wollaston's contrivance for drawing infinitely fine wires, by enclosing the metal to be drawn in much larger substance of another metal. Both being drawn down together, a wire is obtained, of a tenacity absolutely impracticable by simple drawing. In the same way, by forming thicknesses of iron with piled cuttings, the nascent fibres are subjected to an intensity of compression directly proportioned to the size of the pile, which no simple rolling of a small piece of iron could ever produce. The only escape for the compressed particles is in the longitudinal direction; so that, by repeated rollings, the iron is literally spun into a series of wires, firmly compacted together. This is called fibre, and is a feature induced upon iron by these mechanical means. There is no trace of it in meteoric iron; hammered iron presents laminae, rather than fibres; iron of the ancient manufacture hardly discloses them when compared with the modern produce of the rolls. Query, then—Are these fibres iron, or are they cinder; or in what possible way can they be a compound of the two—a of ductile metal and a brittle oxide? Such cinder as may remain in the body of the iron is an accident, and an imperfection. Will Mr. Leighton maintain that the lamination of rails, under severe trials of pressure, is caused by a deficiency of cinder to bind the fibres together? Or is it a more reasonable conjecture that the intervention of some portion of unexpelled cinder in the hollows of a pile, has prevented the surfaces of the iron from coming into close welding contact? I believe little or nothing is really known why iron possesses this singular property of welding; and we want to know more of it. But, confessing this ignorance, I still believe it is a property of the iron itself, and not to be resolved into the general category of cements, by which all sorts of heterogeneous substances may be stuck together, and that with force proportioned to the tenacity of the cement; so that I must refuse to accept so brittle a substance as glass of iron to be the glue which strengthens the chain cable to resist the raging of the elements. It is certain there are substances which do (possibly by inducing intimate contact, and excluding the elasticity of compressed air) assist the welding of iron, but it remains to be proved that they act as cements, or constitute an essential part of the substance. A composition, in which borax is a principal ingredient, is thrown on the surfaces of cast-steel, to assist its welding. Will Mr. Leighton infer from this, that a constituent of good cast-steel is borate of soda? The estimate of cinder, containing 87½ per cent. of iron, must be erroneous, as iron does not combine, in so large proportion, with oxygen. The impracticable carbo-oxide compound I repudiate altogether from the discussion; oxygen, carbon, and iron living amicably together, in a great fire, will be a phenomenon. Let Mr. Leighton fuse oxide of iron without the presence of carbon, and he will obtain that glass of iron of which he thinks carbon is a constituent. DAVID MUSSET.

Nov. 26.

PATENT LAW REFORM.

SIR.—I beg Mr. Campin not to suppose I attach any value to my remarks on this subject, or in the least intended to set them against the tried results of his experience. I was unwilling to take any share in the apathy imputed on an important subject, which is greatly indebted to Mr. Campin's efforts. I, therefore, threw together some hasty impressions on the points of his letter, merely with a good will to do what little I could. If I have been incorrect in any particular, even this may not be without service, if it gives opportunity to Mr. Campin to repeat and amplify his statements of fact. I quite agree that, where a capitalist has resolved to join in carrying out an invention, it will not be of great consequence, in the general expense, whether the charge for securing the right be 100*l.* or 300*l.*; but my view did not extend so far. I merely contemplated the case of a poor inventor, wishing to secure his invention before he entered into a treaty requiring the communication of details. In such a case, though 300*l.* is only three times as much as 100*l.*, yet it would be found that at least 20 persons could bring forward the smaller sum for one that could command the larger. This was the whole scope of my remark.

I am not disposed to differ with the argument, that it is better to bring ample means to the developing an invention—it is a good sound old principle; but would it not tend, as Mr. Campin puts it, rather to the deduction that there would be an advantage in every way in keeping up a high scale of charges? If, as I now understand it, the reduction of fees was brought forward as an alternative for Mr. Campin's amendment, I think in this light it cannot be deprecated too much. If there is to be a choice between the two, a mere reduction of fees is values, in comparison with the beneficial improvements that amendment would introduce. I should like some further detail of the proposal for substituting a scientific referee for "scientific evidence." Evidence on abstract points of scientific opinion is often, certainly, very useless and very little edifying; but there are cases in trials at law, where the common evidence on the facts is hardly separable from the scientific evidence. I should feel obliged by further information on this part of the subject.—DAVID MUSSET: Nov. 28.

ROTARY ENGINES.

SIR.—It would contribute more than any other discussion to forward our mutual objects, if Mr. Weston would communicate details of the working of a rotary-engine on his principle, which he gave some particulars about a year since, of having erected in Scotland. I presume he alludes to this invention. Mr. Weston closes with a very bold challenge—what will the Orkney Engine Company say to it? There is a romance about this engine which dry mechanical details can rarely boast of. The arduous excursion of two inspectors from the Admiralty to Taplow on a wet day, the screwing together the engine in the rain, showing its capacity for the roughest weather, the episode of the weeds, the subsequent correspondence, and last, not least, the name, must, I think, make it dangerous for Mr. Weston to defy its competition. It is true, the name occasioned some perplexity; but I have, I think, ascertained its meaning—that its possessors were much further north than the "Mull of Galloway." I hope soon we shall have accounts of its progress; that a vessel fitted with the Orkney engine has not only reached its patronymic, but struck across the Northern Ocean to circle the Maelstrom—the greatest rotary on record. This I should especially advise as the title of the next rotary engine, indicating the climax of power, swallowing up all other inventions.—DAVID MUSSET: Nov. 27.

THE DIAMOND.

SIR.—I think Mr. Baggs rather misconceives the intention of the passage he quotes from my late father's *Papers on Iron and Steel*. My father intends to express that the action of the carbon begins at the surface of the iron; this is a different thing from the action of the iron beginning on the surfaces of the carbon, which is the essence of Mr. Baggs' proposition for cutting diamonds. Mr. Baggs has, perhaps, not noticed a theory advanced in some late papers in your Journal to explain the peculiar action of iron in absorbing carbon. As it is very inconceivable how iron should absorb into its pores carbon in its ordinary concrete state, it has been assumed with great probability that the process is effected through the medium of a gaseous solvent—hydrogen in some cases, but in the ordinary operations oxygen—which holding the vapour of carbon in solution on the gaseous compound of carbonic oxide, is attracted into the capillary pores of the iron, and decomposed by its affinity, depositing the carbon. I have proposed, as a test, on this interesting fact, the cementing of iron and carbon together in a perfect vacuum. It would prove a delicate and difficult experiment, requiring the greatest skill and experience in conducting nice chemical manipulations—requisites to which I make no pretension, neither to advise how it ought to be attempted. Probably, a platinum tube might

be filled with some gas which would remain neutral—say azote; this again to be charged with fine iron filings, selected as pure as possible from oxide; enclosing a diamond in this, as a form of carbon which could retain no oxygen in its pores; and, before hermetically sealing the tube, the gas to be exhausted as much as possible by a strong air-pump. By some such means the experiment might be realised. If, after prolonged heat, the diamond retained its perfect form, the conclusion would follow, that iron, *per se*, was unable to act upon carbon; if, on the contrary, the diamond had disappeared, and the surrounding iron become carbonized, the necessity of a gaseous solvent would be disproved. The experiment would be highly interesting, and, I think, well worthy the attention of a faithful and eminent practical chemist, capable of devising and conducting every thing necessary to its success.—DAVID MUSSET: Nov. 27.

THE DIAMOND.

SIR.—Whilst I must do justice to the comprehensive reasoning and most ingenious deductions of your highly-talented correspondent, Mr. Baggs, I am compelled to differ from him respecting the non-vapourisation of the diamond, or of other forms of carbon, in contact with malleable iron. It is an undoubted fact that soft iron, cemented in a close vessel with pieces of charcoal, is gradually converted into steel, although no portion of it is actually in contact with the fragments of charcoal. When the iron is in contact with the carbon, the conversion is, indeed, much more speedy than when it is isolated from the latter, and the degree of conversion in the touching portions is greater than that in those which are more remote, so that the former may be saturated with carbon, forming steel-grained cast-iron, whilst the latter are merely brought into the state of soft steel. It is, perhaps, fair to conclude, that the habitus of the diamond, in contact with soft iron, are analogous to those of charcoal under similar circumstances. The effect of cementing a piece of charcoal, in contact with a smooth plate of soft iron, would be to create a nucleus of steel-grained iron in the surface of the plate where the charcoal rested, and an elevation of surface from the crystalline arrangement of the particles constituting this nucleus, which would leave a corresponding depression in the touching plane of charcoal, or carbon. This irregularity would, I imagine, prove fatal to the process proposed by Mr. Baggs for cutting diamonds.

The experiment of Morveau was far from satisfactory. The soft iron enclosing the diamond was melted in a very small Hessian crucible, luted round with earth arising from *pounded crucible*, most probably containing charcoal, or plumbago. Then, again, without forging, and the usual practical tests, it could not possibly be determined whether the ingot produced was really cast-steel, or merely cast malleable iron. I regret that the diamonds alluded to by Mr. Baggs are not in my possession, otherwise I would at once attempt to verify, or disprove, the accuracy of Morveau's experiments. A trial may, however, be readily made, by fusing fine filings of soft iron with from 1 to 5 per cent. their weight of diamond dust, in accurately fitted porcelain crucibles, thus producing, in the event of a combination taking place, the various grades of steel and cast-iron.

Though the diamond may not be vapourised when exposed, to an intense heat, still we may imagine that, when enclosed, and in contact with soft iron, at a high temperature, certain electro-chemical causes may combine to vapourise the former substance, and enable it to penetrate, and combine with the iron. Besides, a diamond exposed in a crucible, placed in a furnace, is necessarily surrounded with an atmosphere chiefly composed of carbonic acid, or oxide, or of both, and these may operate so as to hinder vapourisation from taking place; whilst the diamond, hermetically shut up in a mass of soft iron, and no longer surrounded by the oxidised carbon of the fuel, may readily become vapourised, and united to the iron. Cast-iron, exposed for a considerable length of time to a melting heat, and kept fluid in a close crucible, loses its carbon by degrees, and becomes first steel, and finally soft iron. How does its carbon escape, except as a vapour? And if iron yields up its carbon in the state of vapour (for iron, in the state of fusion, loses its affinity for carbon, and will give out but not absorb the latter), is it not legitimate to conclude that the carbon was, in the first instance, but at a lower temperature, absorbed by the iron in the state of vapour? The affinity of soft iron with the vapour of carbon appears continually to augment in proportion as the temperature is raised, until the point of fusion is attained, when all mutual affinity ceases. Taking advantage of this cessation of affinity, I purpose hereafter to show practically that cast-iron may instantaneously be deprived of the whole, or any required portion of its carbon, and be converted at once into soft iron, or steel, at option.

R. MUSSET.

Coleford, Nov. 26.

ON THE MANUFACTURE OF IRON RAILS.

SIR.—Referring to Mr. Thorneycroft's communication in your last week's Journal, I am sorry to differ with him, as his experience from advanced age ought to be greater than mine; but when he volunteers publicly to give the authority of his name to such slanders as are contained in the letter of the "Staffordshire Ironmaster" of the 28th July, I am compelled to inform him, through the same medium (your Journal), that he is quite incorrect in his supposition of the impracticability of the production of a quality of Welsh ordinary rails best suited for the permanent way of railways. I refer him to the talented engineer of the London and North-Western Railway (Mr. Dockray), who has recently made the experiment of laying down about a mile of ordinary Welsh rails, selected for the purpose; and I am told that these rails stand all the tests to which they have been subjected, with perfect satisfaction to Mr. Dockray, and as yet show no signs of either "lamination," "splitting," or "crushing." These Welsh rails are supplied at *several* pounds per ton less than the rails recommended by Mr. Thorneycroft; so that I really think, before my good old friend (Mr. Thorneycroft) comes so prominently before the public, to give his advice to railway directors, he should make himself acquainted with what is going on in the world, and with the experiments which have been made with respect to the quality of iron best suited for rails for permanent way, and which are certainly in favour of Welsh rails, whatever may be the opinions of a "Staffordshire Ironmaster." R. P. DAVIS.

Rhymney Iron Company, London, Nov. 28.

ELECTRO-MAGNETISM FOR THE RETARDATION OF TRAINS.

SIR.—Some months ago you were kind enough to make a favourable mention of my patent solid wrought-iron railway wheel in your Journal; and I think I cannot make a more acceptable acknowledgment of the obligation I feel under to you for doing so, than by taking the first opportunity of communicating a most interesting application of them to a purpose which promises to become a most important improvement in locomotive economy.

A gentleman of the name of Hjorth recently waited upon me, stating that my wheel (he believed) was all that he required to accomplish a scheme which he had long contemplated, and almost matured—viz., to impart such an increase of adhesiveness to the driving-wheels of locomotive-engines, as should obviate the necessity of such engines being so enormously heavy as at present required. It is almost too well known to justify my mentioning it, that the tractive power of locomotive engine depends upon the adhesion of the wheels to the rails, and that this adhesion is in a ratio to the weight of the engine.

Now, to diminish this weight, and to secure the same effect, Mr. Hjorth suggested making the wheels magnetic, thereby creating an attractive power, which might be put into operation at pleasure; and he proposed to me to prepare two discs of iron, and connect them together by means of an axle, and over the axle was fixed a hollow tube, round which a coil of "copper ribbon" was wrapped, and, by the application of a small battery, the most effectual magnetising of the discs was accomplished. The polarity of the one wheel being *north*, while that of the other would be *south*, and bundles of fittings adhered round the rim of both wheels. By making the contact, a most instantaneous magnetising of the wheels was effected, and a powerful attractive force obtained on the periphery of the wheels; and immediately the contact was broken, that adhesive property forsook them, and thus our most anxious hopes were entirely fulfilled. It was a most interesting experiment, and promises to be mechanically a most important one. Mr. Hjorth has patented the principle; and if, from the larger and more practical attempt, which is now in preparation, the results should bear their due proportion to those obtained from this smaller, or mere "cabinet" one, which we have made, I doubt not that, ere long, we shall find this principle not only applied as I have described, but that the checking breaks of trains generally will be worked by means of the same agent; for by a simultaneous application of this power on the wheels of a train of carriages, it might be stopped, or "brought up," almost instantly.—HENRY SMITH: Vulcan Iron-works, West Bromwich, Nov. 24.

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STEAM-BOILER EXPLOSIONS.

SIR.—Your correspondent, in reference to the recent steam-boiler explosion at Heaton Norris, has only schooled what I have again and again insisted on—namely, that the so-called “safety valves” are a misnomer, and cannot relieve the steam-boiler in the event of a sudden burst of steam, or in cases of emergency, when their functions are most imperatively called for; and, to use your correspondent’s language, “they are a delusion and a snare.” Explosions in steamers occur “just at starting,” or when “getting up the steam,” and seem emphatically to illustrate the view that I have taken of these catastrophes. This was the case with the *Crichton* steamer in the Thames, and the more recent explosion in Belgium; and I well remember, too, the destruction of the *Union* steamer at Hull, several years ago, took place under precisely similar circumstances. This has also been the case with trans-Atlantic steamers, and happen immediately before leaving the pier. I cannot doubt that the prevention of incrustation in steam-boilers will obviate most materially those catastrophes; and unless the water is depurated before it enters the boiler, it is of no use whatever. Safety valves, as usually constructed, are useless for the purpose for which they are intended, and are dangerous, because they induce a false security.—J. MURRAY: *Portland-place, Hull, Nov. 28.*

FALL OF RAILWAY ARCHES.

SIR.—Railway arches are falling—
“Thick as leaves that strew the brooks
In Val Ombrass.”
and it is surely high time that civil engineers should seriously investigate the cause, and inquire into these numerous catastrophes. Since I last addressed you on this subject, seven more arches have fallen at Camden Town. The cause, “unaccountable”—for that is the language used by those who have on the spot pronounced a verdict. It seems to have been proved that it did not arise as “at first conjectured” from the “too speedy striking of the centres of the arches!” The fall of arches does not occur in dry weather, &c.—wet weather and frost, it appears to me, and as far as seems determinable, to be the constant and invariable concomitants and accessories. That the cause I have assigned for their ruin is a just one, seems to my mind as clear as the simplest proposition in existence; and it is quite time the remedy I have proposed should be taken into consideration, or, at any rate, some plan be adopted to meet the contingency.

Oculis quod non servat.

Portland-place, Hull, Nov. 28. — J. MURRAY.

THE ADULTERATION OF BREAD.

SIR.—Mr. Smith, in your Journal of the 17th inst., seems to doubt that either chalk or gypsum are employed in the adulteration of bread. I have examined some scores of samples of both bread and buns, and have most certainly detected both of the substances in question, in many cases, in too notable quantities to have been accidentally introduced, more especially in buns. In some samples, I have found as much as 10 per cent. of chalk and gypsum; I have nearly always discovered alum. As regards the grittiness caused by either chalk or plaster of Paris, that can be readily avoided, as they can be prepared in a cheap manner without possessing that property in the slightest degree. I should not have noticed this had I not been engaged in a very extensive series of experiments on the adulterations of most of the articles of food in common use.—JOHN MITCHELL: *Nov. 26.*

THE JOINT-STOCK COMPANIES’ WINDING-UP ACT.—In some of the projects now undergoing the process of the Act before the Masters in Chancery, depositors who paid their money in the full assurance of the scheme being a *bond-side* investment have been declared to be entitled to receive back either the whole, or at least a portion of their advances; and many such shareholders, who expected to have to contribute, find themselves in the condition of receivers. Lawyers and scheming projectors will protest against this unlooked-for result; but it is at least a step towards justice, and will prevent the introduction in future of such victimising schemes.

THE GERMAN MINING COMPANY—WINDING-UP ACT.—The affairs of this defunct enterprise were before the Master in Chancery, Tinney, on Saturday last, to be wound up under the provisions of the Joint-Stock Companies’ Act. The company was projected for purchasing quicksilver and copper mines in Bavaria, Prussia, and Duchy of Nassau, with a capital of 50,000*l.*, in 100 shares, the directors having power to make calls on the shareholders to the extent of 50*l.* each call not to exceed 50*l.* per share. The capital proving insufficient, five several issues of new shares were created; but, in spite of this, the affairs became greatly embarrassed, and it was resolved, in 1846, to dispose of the mines and property, to pay off the liabilities of the concern amounting to 14,956*l.* The proprietors were called on to contribute 100*l.* per share on the old, and 20*l.* per share on the new stock to pay off the debts, but did not respond to the calls, and the liabilities now amount to 16,000*l.* The official manager reports that the expenditure has exceeded the moneys raised by the issue of shares by 19,400*l.*, of which 7189*l.* was advanced by the directors. There is a debt due to the London and Westminster Bank of 12,660*l.* To prevent the forfeiture of the mines, which are now for sale, they are being carried on on a limited scale, and the receipts for the first three months of the year have slightly exceeded the outlay. On Saturday the Master proceeded with the settlement of the list of contributors liable to a *pro rata* subscription to pay off the amount of liabilities. Several persons cited to appear as contributors have repudiated the shares, and no act amounting to an acceptance of them on their part being proved, the Master has erased their names from the list.

MIDLAND GRAND JUNCTION RAILWAY.—On Tuesday, the winding-up of this company’s affairs came on before the Master in Chancery, Senior, at his court, in Southampton-buildings, on the petition of William Kempe, of Teignmouth. The petition set forth that the company was originated in 1845, to connect the Great Western, London and Birmingham, and Direct Manchester Railways, with a proposed capital of 1,250,000*l.*, in 50,000 shares of 25*l.* each, deposit 2*l.* 12*s.* 6*d.* afterwards reduced by the acting committee to 5*l.* per share. A large sum was paid to the provisional committee, no portion of which had ever been returned to the subscribers nor any account rendered, including cash payments from the provisional to the acting committee of 552*l.* An action is now pending against the petitioner by the Commercial Bank of London for the recovery of 500*l.* for money advanced. Mr. Ernest was appointed the official manager.

DIRECT WEST-END AND CROYDON RAILWAY.—The winding-up of this company’s affairs came on, Tuesday, before the Master in Chancery, Tinney, on the petition of Captain Hamilton, of Hampstead. The petition stated, that the proposed capital was 800,000*l.*, in 40,000 shares of 20*l.* each; deposit, 2*l.* 12*s.* 6*d.* Shares were allotted, and a large sum was paid by way of deposit, of which no account whatever had been rendered to the subscribers by the acting committee. There are many outstanding liabilities. The affairs of the company, petitioner states, were managed by Major Beresford, M.P., Mr. Bulkley Hughes, M.P., Sir J. Anderson, M.R.I.A., Sir John Key, Sir H. Webb, Captain Macdougall, and Mr. A. W. Hillary. Mr. H. Harris, who appeared for the petitioner, proposed as official manager, to inquire into the transactions, Mr. F. G. Hollond; and Mr. Toogood, on behalf of some of the members of the acting committee, Mr. Goodchap. The Master appointed Mr. Hollond, intimating that he would not feel himself justified in appointing any person proposed by individuals who would have to appear as accounting parties to the estate.

CHINESE IRON.—The vessel, *Mercus*, arrived at the port of Liverpool, from Hong Kong, has brought 2990 pigs of iron, as a portion of her cargo, consigned to a firm of eminence. This is a very interesting importation from China.

IRISH COAL.—The subjoined gratifying statement appears in the *Newry Examiner*:—“The extensive coal-field of Ballycastle has at last been opened, and a cargo of coals therefrom has arrived at the quay of Belfast. It is 55 years since the Irish Parliament discussed the national advantage of constructing a harbour at Ballycastle for the exportation of its coals; but, like all other important improvements out of Dublin, they neglected this great work. The public is now indebted to an English company for opening this mine of wealth, which will afford so much employment. The harbour, as an asylum for shipping going north about from Glasgow, Liverpool, and Belfast to America, and our colonies, should be looked to by Government; the Irish ports would then derive a supply of native coal from this inexhaustible mine. In the meantime, the company that has obtained the extension of the line of railway from Ballymena to Ballymoney should be aided by the Government, and further extended from Ballymoney, which is but ten miles to Ballycastle. This arrangement would afford a vast supply of this indispensable article to the flax spinners and linen bleachers of Ballymena, Coleraine, and the Bann Valley, which, with the lately improved navigation of the Bann, would open a communication to the entire province of Ulster.”

MINIATURE STEAM-ENGINE.—We have this week had shown to us, by Mr. Blankley, of Brunswick terrace, Gateshead, under a glass shade of the size of a lady’s thimble, a steam-engine that might have served for a cotton-mill in Lilliput. The whole machinery, fly-wheel included, stands upon a twopenny-piece; yet so exact and skillful is the workmanship, that when a steam-pipe is applied (for there is no boiler), the engine is immediately set in motion, and works with admirable precision. It would make a pretty toy for a lady, and might, perhaps, be taught, by the aid of a tea-kettle, to thread her needles, hem her cambric handkerchiefs, pare her nails, and assist her lover in “getting up his steam” to “pop the question.” The tiny machine was made by Mr. Blankley’s nephew, Mr. William Blankley, of Leeds, who came over to that town from Germany, to fill the office of engineer at the Victoria Foundry.—*Ibid.*

MINING ADVENTURE IN SOUTH AUSTRALIA.

REVIEW OF ITS STATE AND PROSPECTS.

MINERALS.—South Australia is a rich mineral country. The minerals (copper and lead) abound in the district on the eastern coast of St. Vincent’s Gulf; York Peninsula, and the district on the western coast of the same gulf give indications of being equally rich in mineral. Other minerals—viz.: gold, silver, emery, plumbago, and iron are known to exist. Emery is the only one called for; and, to use your correspondent’s language, “they are a delusion and a snare.” Explosions in steamers occur “just at starting,” or when “getting up the steam,” and seem emphatically to illustrate the view that I have taken of these catastrophes. This was the case with the *Crichton* steamer in the Thames, and the more recent explosion in Belgium; and I well remember, too, the destruction of the *Union* steamer at Hull, several years ago, took place under precisely similar circumstances. This has also been the case with trans-Atlantic steamers, and happen immediately before leaving the pier. I cannot doubt that the prevention of incrustation in steam-boilers will obviate most materially those catastrophes; and unless the water is depurated before it enters the boiler, it is of no use whatever. Safety valves, as usually constructed, are useless for the purpose for which they are intended, and are dangerous, because they induce a false security.—J. MURRAY: *Portland-place, Hull, Nov. 28.*

abstract, that the South Australian mineral is well worth the working; that a new impulse is given to mining adventure in the province by the state of the British market, and by the erection of smelting-works; but that mining adventure will be at a stand-still for want of capital; that the colonial resources are inadequate, and that British capital is absolutely necessary.

CONCLUSION.—There appears to be a fair opening for British enterprise, an investment of British capital. In the present state of the money market in South Australia any severe competition at the public sales is not very likely. There are several mineral properties which would, to all appearance, well repay an adequate outlay; and, doubtless, very favourable terms could be made with the proprietors. It must, however, be noted, that already six companies exist in London, although there does not appear to be any probability of interference on their part. But any new company, to insure success, must combine with command of mining experience ample resources, and prudence in its managers beyond the average prudence of London boards.

In conclusion, the opinion of an authority in mining matters (*The Mining Journal*) is quoted—viz.: “It cannot be supposed that every mine will prove a Burra Burra, where little or no capital was required to make her a paying mine. The numerous sets were taken up, no doubt, under the impression that it was only to drive, or sink, and find courses of ore; but it will be found there, as it is here, and in all mineralised districts, that time and capital must be obtained to secure a remunerative return. We believe that many of the mines now in course of operation will, with forbearance and money, prove good and lasting mines. Whether there be a sufficient floating capital in the colony to bring them into a state of productiveness, will take the evidence of time to prove.”—*Mining Journal*, July 28, 1849, p. 359.

[The above epitome of particulars relative to mining adventure in South Australia, forms the concluding section of a manuscript treatise on this subject which has been submitted to our inspection. The compilation is a work of considerable labour, collecting into a focus the various and scattered particulars of the mines, mineral product, and mining companies, submitting them readily to the eye by a novel tabular arrangement, and by means of a comprehensive series of tables, subjecting the collected information to an analysis which gives, as a product, the review set out above. A map is annexed. The work contains everything, either in information or illustration, which is necessary to enable a reader to form an estimate of the state of mining matters in South Australia; and, as the subject of South Australia and its mines, will be brought prominently forward in the forthcoming session of Parliament, by the debates on the Legislative Act for the Australian Colonies, would necessarily be interesting to an extended class of readers. The object and views of the compiler are given in the letter to us, which we annex.—ED.]

Ms. Ebor.—Some months ago, some friends, who contemplated a mining speculation in South Australia, requested me to ascertain for them the state of mining matters there. I entered on the investigation without the remotest notion of writing a book, and expecting to arrive at a result in a few days. In pursuing the subject, however, I have consumed many months, and have most unintentionally compiled a work on the subject. I have been recommended to place the information I have collected at the public disposal by publication, and am encouraged thereto by the opinions of those whose opinions are authorities; but I am desirous of finding my way before I venture on a step so formidable. I therefore submit to you the enclosed abstract of my compilation, in the hope that you will kindly give it place in your valuable columns.—J. E. B. CURTIS: *Hampstead, Nov. 21.*

PENN RECCA SLATE QUARRIES, NEAR ASHBURTON.

We have often noticed the persevering energy and enduring patience of the enterprising proprietors of these works—many a fire-side has been cheered through numerous dreary winters, by the large expenditure in labour, amounting (as we are informed) to nearly 30,000*l.* during the past seven years. A considerable portion of this amount has been expended in tunnelling and open cutting, which dispenses with machinery for lifting, and affords facilities for economical working, possessed by no other quarries in the West of England.

In our visit last week we were much delighted with the busy scene which presented itself, and more particularly with the ease with which blocks of many tons weight were quarried and removed to the end of the tunnel, where they were all passed on to a weigh-bridge, and the weight of each load taken, and thence conveyed to the slate works, where they were converted into roofing slates. After spending a very pleasant hour at this part of the works, we ascended the hill to the top of the quarry, where we found a number of men removing the surface rock, laying open fresh slate beds, and making every necessary preparation for considerably extending the work of slate-making. Here a new weigh-bridge had just been fixed, and masons were busily engaged erecting offices for this part of the works, which afforded us considerable satisfaction, as evidence of the cheering prospects which the enterprising proprietors have in view. These quarries had been worked on a small scale, for hundreds of years, before the present proprietors became possessed of them. As early as the reign of Charles the First, the slate of this quarry was used for roofing the Ashburton church, where it remained until about nine years ago, having withstood the exposure to weather for a period of 200 years, with very little signs of decay, and much of the slate, when removed from the church, was again used in covering cot houses. Some of the farm houses in the parish of Staverton bear testimony at this moment to its durability, some of which have all the sides, as well as the roof covered with it, and a date on the same, showing that as early as James the First’s time these quarries were worked for roofing slates, and what is most remarkable, the produce of the year 1616 remains at present perfectly sound and good, in the position where they were placed.

This slate was supplied in London for the first time about seven years ago, where it has since been much sought after, and where the principal produce of the quarry has hitherto been forwarded; but the extensive nature of the workings, and fine beds of rock, would appear now to admit of unlimited supplies; and we heartily congratulate the proprietors, as well as the neighbourhood, on the success of the speculation, more particularly the labouring class, on whom it will confer a permanent benefit.

The eminent architect of the Royal Exchange, London, W. Tite, Esq., in speaking of the slate says, “it is in my judgment of excellent quality, and of unequalled beauty of colour.” The tint, sage green, appears to me to be just what is required to harmonize with buildings, when it is desirable to preserve the character of ancient architecture.” And the celebrated Dr. Ryan, after submitting it to the various acids, to test its durability, remarks, “The slate is of a most excellent colour and texture; and as its power of absorbing moisture is very small, it is a most durable material.”

One of the most valuable features in this slate is the fact, that it contains no hard in appearance as some others) is the fact, that it contains no mastic, iron, or any other corroding metal—it component parts being alumina and silica, with lead as the principal colouring matter, forming, as is well known to the analytical chemist, ingredients which bid defiance to moisture, atmosphere, and the impurities of crowded localities.—*Plymouth Journal*.

MILTON IRON-WORKS.—We hear, with much pleasure, that the celebrated Milton Iron-Works, at Hoyland, which have been for a considerable time closed, are to be re-opened shortly by Messrs. Dawes, of the Broomford Works, Staffordshire, for the production of tin-plates and iron, exclusive of casting.—*Sheffield Times*.

MEETING OF THE IRON TRADE AT LIVERPOOL.—A meeting of operatives, connected with the iron trades of this town and its vicinity, was held on Monday evening, at the Music-hall, Bold-street, to hear from a deputation from the Central Committee of the Iron Trades of London statements as to the evils being suffered through the systematic reduction of wages now being made by the employers throughout the country.—Mr. GEORGE CORNFORTH was called to the chair. There was a numerous attendance of workmen employed in various branches of the iron trade. Mr. BRADDOCK, one of the deputation, said the principal grievance at present affecting the trade was the reduction of wages by the masters generally—one of the most important being that which had been made at the Nine Elms shop on the South-Western Railway. A few weeks ago the men, who had been working three-quarters time, considered that as trade was improving in the country, it was desirable that they should be allowed to work full time. With this view, the men waited upon Mr. Gooch, manager for the company, when he intimated that it would be desirable to reduce the wages. This was, of course, objected to; but after several subsequent interviews, Mr. Gooch reiterated his determination to carry out the proposed reduction, which was to be threepence, sixpence, and, in some cases, a shilling per day, according to the ability of the workman.—Mr. NEWTON (also a member of the London deputation) said events were taken place which could only lead to the conclusion that railways and employers generally would attempt further reductions; for on the Midland Counties Railway there had been a reduction of 7*s.* per cent. There had also been a proposed reduction in the workshop of Mr. Fairbank, of Manchester, added to which a disturbance existed at Bury on the question of wages. A resolution was then proposed, and adopted unanimously, to the effect, “That the meeting agreed to subscribe the sum of twopence each weekly, to support the men out of employment, caused by a reduction of wages at the South-Western Railway; the collection of subscriptions to be left to the committee who got up the meeting.” A second resolution was also adopted—“That a committee be appointed by the iron trades in this town to form a central committee, for the purpose of co-operating with similar committees in other towns.”—*Liverpool Mercury*.

PRACTICAL MODE OF ASCERTAINING THE RATE OF A CLOCK.—All the stars are found to be unanimous in giving the same exact duration of 23h. 56m. 4.93s for the sidereal day; this being the case, to ascertain the rate of a clock or watch, “an observer need only station himself to the north of some well-defined vertical object, as the angle of a building, and placing his eye exactly at a certain fixed point (such as a small hole in a plate of metal nailed to some immovable support), notice the successive disappearances of any star behind the building by a watch—taking care that the part of the edge behind which the star disappears be quite smooth; the verticality of the edge should be ascertained by the use of a plumb line.”—*Herschel’s Outlines of Astronomy*.

GENERAL RESULT OF SUMMARY.—It appears, on a general view of the above

* The last advices mention another mine, entitled “Wheat Maria,” of which, however no particulars, beyond the name and price of shares, are given.

MEETINGS DURING THE ENSUING WEEK.

TUESDAY....Grand Junction Canal Company—offices, at Eleven.
 THURSDAY....Glen Omond Union Mining Company—offices, at Two.
 MINES Royal and Mineral and Battery Works Co.—offices, at Twelve.
 Equitable Assurance Company—offices, at Eleven.
 Cameron's Coalbrook Steam-Coal and Swansea and Loughor Railway Co.—offices, at One.
 Waterford Bridge Company—Freemasons' Tavern, at One.

[The meetings of Mining Companies are inserted among the Mining Intelligence.]

FLUCTUATIONS IN THE STOCK AND SHARE MARKET,
DURING THE MONTH OF NOVEMBER.

Stocks and Shares.	Share.	Paid.	Pr. Nov. 1.	Highest.	Lowest.	Pr. Dec. 1
Cards	—	—	92	95	92	95
Exchequer Bills	—	—	44 pm.	52 pm.	42 pm.	47 pm.
RAILWAYS.	—	—	—	—	—	—
Brighton	Stock £100	£72	£82	£72	£64	£64
Birmingham and Oxford	Stock £20	20	25	25	25	25
Caledonian	Stock 50	50	132	132	104	122
Eastern Counties	Stock 20	20	20	24	18	22
Great Northern	Stock 25	25	74	74	62	74
Grosvenor	Stock 100	100	59	63	54	59
London and North-Western	Stock 100	115	116	110	114	114
Midland	Stock 100	47	51	49	51	51
North Staffordshire	Stock 20	17	92	92	78	82
South-Eastern	£32 2 4	32 3	184	192	172	192
South-Western	Stock 50	31	31	30	31	31
York, Newcastle, & Berwick Stock	25	172	18	164	18	18
York and North Midland	Stock 50	196	194	184	194	194
Boulogne and Amiens	Stock 20	20	82	54	54	54
Northern of France	Stock 20	14 8	11	12	11	11
East Indian	Stock 20	31	31	31	34	31
Great Indian Peninsula	Stock 5	—	—	—	—	—

It will be observed, that the rise in Cards has been equal to 34 per cent., but that the share market, except in the instance of the Brighton line, can scarcely be said to have more than maintained its position.—*Times*.

CURRENT PRICE OF GOLD AND SILVER.

Foreign gold, in bars per oz. £3 17 9 New dollars per oz. £0 4 10
 Portugal pieces 0 0 9 Silver in bars (standard) 0 4 11 8

New Patents.

LIST OF PATENTS GRANTED DURING THE PAST WEEK.

F. J. Duburguet, of Cahors, France, for improvements in hydro-pneumatic engines.
 J. P. Gillard, gentleman, of Paris, France, for certain improvements in the production of heat and light in general.

W. G. Taylor, gentleman, of Burton House-hall, Westmorland, for improvements in lint and linting machines.

G. Calloway, of Putney, Surrey, station agent; and R. A. Purkis, of the same place, engineer, for certain improvements in propelling ships, and other vessels, also in apparatus for ploughing land.

C. Cowper, of Southampton-buildings, Chancery-lane, for certain improvements in piling, lagging, and forging iron for plates, bars, shafts, axes, tyres, cannons, anchors, and other similar purposes.

J. Barrow, of St. Pauls, Deptford, Kent, engineer, for improvements in axles, and axle-boxes, locomotive engines, and other railway carriages.

A. Adier, of Paris, France, engineer, for improvements in producing light.

L. Lamplough, of Snow-hill, consulting chemist, for a new mode of supplying pure water to cities and towns.

F. C. Hills, of Deptford, Kent, manufacturing chemist, for an improved mode of preparing peat for making fuel or gas, and of manufacturing gas, and of obtaining certain substances applicable to purifying the same.

J. G. Newman and J. Newman, of Birmingham, for improvements in the manufacture of button studs, and other dress fastenings and ornaments.

C. Barlow, of Chancery-lane, London, for improvements in the manufacture of a certain pigment. (Being a communication.)

Louis Napoleon Le Gras, of Paris, France, civil engineer, for improvements in the separation and disinfection of fecal matters, in the manufacture of manure, and in the apparatus employed therein.

F. Tongue Rufford, Prescot-house, Worcester, fire-brick manufacturer; L. Marson, of Cradley, in the same county, potter; and J. Finch, of Pickard-street, City-road, Middlesex, manufacturer, for improvements in the manufacture of baths and wash-tubs, or wash vessels.

DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

Reynolds and Tillicroft, New Bond-street, ladies' haut-ton vesture.
 T. Melting, Rainhill Iron-Works, near Liverpool, game register.
 Lewis Le Richemont, Honiton, spring for a spring neckcloth.
 G. Dickenson, New Bond-street, comprehensive drawing folio.
 J. and J. Holmes, Regent-street, manifold cloak.
 F. B. Newton, Manchester, the Newton coat without seam.
 W. Burgess, Blackfriars-road, guita parcia hose joint.
 F. Klaum, York-street, Commercial-road East, rotary heel tip.
 W. Murray, University-street, compensating ball-lever.—*Mechanics' Magazine*.

PATENTS RECENTLY EXPIRED.

J. Hellewell, Salford, dyer, for an improved process or manufacture, whereby the texture of cotton and other fabrics, and materials may be rendered impervious to water.
 H. Jeffries, Birmingham, goldsmith, for improvements in buttons.—*Patent Journal*, 4, Red-lion-square, Holborn, London.

RAILWAY TRAFFIC RETURNS.

Names of Railways.	Length, 1849	Present ac- tual cost, 1848	Price per share,	Div.	Traffic Returns, 1848	
					1849	1848
Aberdeen	33	16	1,000,547	132	13	£625
Belfast and Ballymena	37	37	514,968	19	5*	428
Birkenhead, Lancashire, & Cheshire	19	15	1,088,804	37	5†	757
Bolton, Blackburn, & West Yorkshire	14	—	786,384	6	—	38
Bristol and Exeter	80	75	2,660,490	54	—	3,006
Caledonian	160	141	5,149,326	12	12	3,675
Chester and Holyhead	84	59	3,358,217	10	4	1,262
Dublin and Drogheda	35	35	778,365	26	—	589
Dublin and Kingstown	7	7	39,915	—	—	562
Dundee, Perth, & Aberdeen Joint	47	47	544,554	13	6‡	1,056
East Anglian (Lynn Eye)	91	59	1,247,416	12	—	656
East Lancashire	75	24	2,628,519	12	5	2,667
Eastern Counties and Norfolk	322	29	12,027,066	74	—	12,972
Eastern Union	78	60	1,782,703	13	—	1,446
Edinburgh and Glasgow	57	52	2,923,199	28	6	3,223
Edinburgh and Northern	78	34	3,241,276	102	2	—
Glasgow, Paisley, and Ayr	102	74	2,574,330	47	3	2,328
Glasgow, Paisley, & Greenock	23	23	852,446	14	2	968
Gt. Northern & East Lincolnshire	143	—	5,138,736	71	5†	2,988
Gt. Southern & Western, Ireland	162	110	3,552,589	31	6†	2,651
Great Western	230	121	11,671,042	59	6‡	14,093
Lancaster and Carlisle	90	70	1,476,102	48	48	2,880
Liverpool, Crosby, & Southport	13	—	84,455	31	—	84
London and North-Western	478	428	26,251,635	114	7	38,424
London and Blackwall	54	—	1,299,675	34	31	1,122
London, Brighton, & South Coast	170	162	5,602,600	81	24	8,988
London and South-Western	220	194	7,874,259	31	58	7,597
London-Derry and Enniskillen	142	141	187,739	16	—	123
Midland Company	471	94	15,133,779	50	50	16,971
Midland Great Western (Irish)	50	36	723,332	23	4†	1,169
Monklands	36	—	486,245	6	—	—
North British	122	83	3,649,655	11	44	3,114
Scottish Central	45	—	1,364,328	16	7	1,111
Surreyway and Chester	42	23	969,618	13	5	1,452
Scrophoria Union	40	—	58	—	349	—
South Devon	57	29	1,909,332	51	5	1,198
South-Eastern	189	163	8,665,007	193	54	8,249
Taff Vale	38	40	879,110	74	22	1,895
Ulster	36	36	723,289	45	—	764
Waterloo and Limerick	25	—	812,894	—	—	—
Whitehaven Junction	12	12	150,879	98	3	238
Yorks, Newcastle, & Berwick	290	242	6,827,849	172	7	12,177
York and North Midland	256	234	4,983,618	193	7	6529

COAL MARKET, LONDON.

PRICE OF COALS PER TON AT THE CLOSE OF THE MARKET.

MONDAY.—Burdett's West Hartley 14 6—Carr's Hartley 14 6—Davidson's West Hartley 12 6—East Adair's Main 18 6—East Wylam 13 9—Hastings' Hartley 14 3—Hastings' Hartley 12 6—North Ferrey Hartley 14 3—Old Tanfield 13 6—Ord's Redheugh 14 6—Tanfield Moor 15—Tanfield Moor Bute's 14 6—West Hartley 14 6—West Wylam 15 6—Wylam 16—Wall's End Brown's Gas 13 6—Morrison 16 6—Original Gibson 16—Walker 16—Eden Main 16 9 and 17—Lambton Primitive 17—Bell 17—Belmont 17 3—Bradby 18—Hutton 18—Haswell 18 3—Heselden 16—Lambton 17 9—Lumley 16 9—Russell's Hutton 17 9—Stewart's 18—Whitwell 15 9 and 17—Caradoc 17—Casop 17—Denison 16—Hough Hall 16 10—Kelsie 17—South Hartlepool 17—West Hetton 16 6—Whitworth 14—Adelaide Tees 17 3—Maclean Tees 16 3—Seymour Tees 16 3—South Durham 16 8—Helen Tees 15 6—Tees 18—Cornforth 15 9—Cowpen Hartley 14 9—Howard's West Hartley Netherton 14 6—Nixon's Merthyr and Cardiff 21 6.—Ships, 119; sold, 41.

WEDNESDAY.—Carr's Hartley 15—Chester Main 16 6—Davidson's West Hartley 15—East Adair's Main 14 8—East Wylam 12 9—Hastings' Hartley 15—Hollywell 16 6—New Tanfield 14 3—Old Tanfield 16—Tanfield Moor Bute's 14 6—West Wylam 15 6—Wylam 16—Wall's End Brown's Gas 14 3—Brown's 16 8—Barnton Killingworth 17 6—Clemall 15 6—Gasforth 17 9—Hotspur 16 6—Walker 17 9—Bell 18 2—Belmont 18 6—Bradby 19—Hutton 19 3—Hawes 19—Jennasohns 17 3—Lambton 19—Lumley 18 6—Stewart's 20—Hartlepool 19 3—Millbank 16—Whitworth 15—Richardson's Tees 17—Seymour Tees 17 9—Stewart's Tees 15 6—Tees 19—Cowpen Hartley 15 3—Howard's West Hartley Netherton 15—Nixon's Merthyr and Cardiff 21 6.—Ships, 80; sold, 50.

FRIDAY.—Carr's Hartley 15—Davidson's West Hartley 15—East Adair's Main 13 9—Hastings' Hartley 15—Old Tanfield 14 6—West Hartley 15—West Wylam 15 6—Wylam 16—Wall's End Brown's Gas 13 9—Bensham 15—Eden Main 18 6—Hutton 19 3—Caradoc 18—Hutton 19—North Hetton Lyons 15 2—Russell's Hutton 19—Stewart's 19 3—Caradoc 18—Hough Hall 18—Seymour Tees 17 9—Tees 19—Anthracite 26—Birchgrove Graigloch hand picked 19 6—Cowpen Hartley 15 9—Howard's West Hartley Netherton 15—Nixon's Merthyr and Cardiff 21 6.—Ships, 80; sold, 50.

SATURDAY.—Carr's Hartley 15—Davidson's West Hartley 15—East Adair's Main 13 9—Hastings' Hartley 15—Old Tanfield 14 6—West Hartley 15—West Wylam 15 6—Wylam 16—Wall's End Brown's Gas 13 9—Bensham 15—Eden Main 18